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“Stocker Cents” article

Grass Tetany Revisited

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Unfortunately for several cattle producers in the state, grass tetany season arrived early and with a vengeance. Reports of cows down from grass tetany have been coming in to the Extension offices. The following article is an abbreviated version of a January 2007 article in the Mississippi BCIA newsletter. It describes grass tetany prevention and management practices for Mississippi.

What is grass tetany?

Grass tetany, also known as grass staggers or hypomagnesemia, is one of the more common metabolic disorders in beef cattle in Mississippi. Grass tetany results when magnesium (Mg) and calcium (Ca) levels in forages are too low to meet the requirements of cattle and cattle do not receive adequate Mg and Ca supplementation. Grass tetany can result from low magnesium intake, high potassium (K) and low sodium intakes (which affect magnesium absorptions, or low blood calcium).

Grass tetany is typically associated with low levels of Mg or Ca in cattle grazing annual ryegrass, small grains (e.g., oats, rye, wheat), and cool-season perennial grasses (e.g., tall fescue) in late winter and early spring. During this time of the year, there is often a flush of new forage growth. Forages grown on soils deficient in Mg, wet soils, or soils low in phosphorus but high in potassium and nitrogen (N) may contain very low levels of magnesium and calcium. This is also the time of the year when many herds are calving or approaching calving. Grass tetany most commonly affects cattle in late gestation or early lactation, particularly the highest-producing animals in the herd. Magnesium and calcium requirements of lactating cattle are far greater than those of dry cattle. This predisposes cattle to grass tetany during lactation.

Grass tetany is described as a “metabolic” disorder instead of a nutritional disorder because grass tetany is not necessarily associated with a dietary deficiency (low Mg levels in the diet), but instead, occurs when there is not enough Mg circulating in the blood and cerebro-spinal fluid for the animal to function normally. Frequently, there are factors that can reduce absorption of Mg into the blood stream, despite seemingly adequate Mg levels in the feed or forage. For example, Mg absorption is inhibited by high concentrations of K and N, with K being the dietary factor recognized as having the greatest and most consistent effect on depressing Mg absorption in cattle.

Which animals are at risk?

Early signs of disease may be subtle and include restlessness, separation from herd, and anorexia. Clinical signs of grass tetany include nervousness, muscle twitching and strong contractions, poor coordination, lying down, inability to stand, drooling, and teeth

grinding. The disease typically progresses very rapidly leading to seizures and death if untreated.

An accurate diagnosis is important to allow formation of best treatment and prevention plan for the herd. Measuring the blood Mg level is necessary for a definitive diagnosis, but most times clinical signs, the type of animal affected and treatment response lead to a reliable, tentative diagnosis. If an animal is found deceased and low magnesium was suspected, samples may be collected to measure Mg levels in the fluid within the eye to confirm the diagnosis.

The condition is most commonly seen in cows and heifers in the first 60 days post-calving, although isolated cases have been noted in calves and steers. There has not been much research on the Mg requirements of beef cattle; however, the limited studies conducted to date indicate that there are significant increases in the requirements for Mg after calving. This research showed that the daily Mg requirement for cows between 1 and 35 days after calving is approximately 21 grams/day. This requirement falls to about 18 grams/day when the calves are over 150 days old. Requirements for Mg can differ among breeds of cattle as well. Brahman influence cattle have an advantage in Mg absorption and tend to be less susceptible to grass tetany than other breeds.

The role of forages in grass tetany

As the name implies, cases of grass tetany are frequently seen in cattle grazing lush spring grass. Grass tetany is generally associated with cool-season grasses, such as annual ryegrass and tall fescue. While the cool-season grasses generally have adequate levels of Mg to meet the needs of cattle, they are much lower in Mg than many other common forage species. Consequently, there does not have to be much reduction in Mg levels to create a dietary deficiency, particularly in a cow that has just calved. The Mg, Ca, and K levels in legumes and other non-grass species are much higher than in the cool-season grasses, especially annual ryegrass. Therefore, more attention needs to be paid to cattle grazing pure stands of annual ryegrass or cereal crops.

The relative levels of other minerals in the forage, such as Ca and K, also need to be considered. Relatively high levels of Ca and K in the diet can interfere with the absorption of Mg by cattle. Therefore, forages with a high Ca and/or K level, relative to the Mg level, are more likely to cause grass tetany. The cool-season grasses fall into this category posing the greatest risk.

Prevention and treatments for grass tetany

While careful pasture fertilization strategies can reduce the risk of grass tetany, the most reliable method of grass tetany prevention is supplemental feeding of Mg and Ca during the grass tetany season. Both mineral elements can be included in a mineral mix as part of a free-choice mineral supplementation program. Start feeding a high Mg mineral one month prior to grass tetany season. A good target for Mg levels during grass tetany season is 14% Mg for a mineral with a projected intake of four ounces per head per day.

Palatability of Mg supplements can be low, so it is important to monitor mineral consumption to make sure that cattle consume adequate quantities. Moving mineral feeders closer to areas where cattle congregate can also be an effective method for increasing mineral consumption if necessary. If calving pastures are large, multiple mineral feeders should be available to the herd. Some cows will remain separated from the herd after calving, so mineral feeder placement in remote areas of pastures may be prudent. Feeders should be checked regularly to ensure that mineral does not run out or become caked. If management changes do not bring mineral intake to required levels, mineral formulation changes should be considered.

It is important to note that while Mg deficiency can result in grass tetany, excessive Mg supplementation can cause production problems as well. Clinical signs of Mg toxicity include severe diarrhea, weight loss, drowsiness, and damage to rumen tissues. Under most production circumstances, however, overconsumption of Mg is unlikely to cause beef cattle death losses. Mg deficiency is a more likely scenario. Consult a veterinarian for grass tetany treatments for the herd. Early treatment of grass tetany is important. Collapsed cattle that have been down more than 12 to 24 hours will seldom recover.

Proper mineral supplementation, fertilization, and pasture management practices can help reduce the risk of grass tetany. It is still always important to closely check cattle on a regular basis, particularly the more susceptible animals like cows that have just calved. Consult with a veterinarian as soon as potential problems arise. For more information on beef cattle production, contact your local Extension office.