

Reducing the Risk of Grass Tetany

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Grass tetany or hypomagnesmic tetany occurs when there is too low a level of Magnesium (Mg) in the cow's blood. Grass tetany, is caused by a low content or availability of Mg in pasture or hay. The availability of Mg is reduced when the forage is low in Mg or when the forage is high in nitrogen (N) or potassium (K) relative to Mg. The latter often occurs after heavy application of mineral fertilizers or manure. The uptake of Mg is depressed in cold soil when there is inadequate phosphorus (P) which is needed for Mg uptake by plants. Grass hay crops grown under cool moist conditions and those that have been rained on often contain low levels of Mg and are at risk for causing winter tetany in beef cows. Older cows especially during early lactation are most prone to grass tetany since Mg uptake decreases as cattle age and Mg requirement is highest in early lactation. Cows in early lactation need a ration containing 0.20% Mg (dry matter basis) while they only need 0.12% Mg during gestation. Growing and finishing cattle need 0.10% Mg.

Soil Fertility Management

The risk of grass tetany can be reduced partly by proper soil fertility management. When soil test Mg is in the low to medium range (less than 250 lbs. Mg/acre or less than 12% of the soil CEC) use high Mg limestone (dolomitic limestone) to increase soil test Mg and plant Mg uptake. High quality dolomitic limestone contains 12-13% of actual Mg or 20-22% Mg oxide equivalent. The cost of this lime is justified by the long-term advantages in plant and livestock nutrition and health. One ton of dolomite (12% Mg) /acre adds 240 lbs. Mg/acre to the soil. When the soil contains over 250 lbs. Mg/acre it is generally safe to use high calcium (Ca) lime (calcitic lime) to correct soil pH. For optimum crop production soil test values for nutrients reported as part of the soil cation exchange capacity (CEC) should be 70-80% Ca, 12-15% Mg, and 3-5% K.

Cold soils reduce the availability and uptake of soil P which is needed by plants for the uptake of Mg. Having the soil testing high in P helps ensure that plants are able to take up Mg, reducing the risk of tetany. The freezing and thawing of soil during the winter releases K from the clay allowing grasses to take up extra K in the spring. This is accentuated when N is applied to grass pastures in the spring. Avoid applying K or N fertilizer to grass pastures in early spring to reduce the risk of tetany. Apply K fertilizer in late summer and early fall when it is most needed by plants. Likewise apply N to pastures after the soil has warmed in the spring. Another option is to apply N in the late summer or early fall to stockpile forage for fall grazing. Grasses benefit from

N at this time of year since tiller buds needed for growth next year develop in the fall. Also, N recycled through manure and urine increases grass growth the following spring.

Legume management

Legumes contain more Mg than grasses so increasing the legume content in pastures and hay fields reduces the risk of grass tetany. In many cases this is accomplished by correcting the soil pH using high Mg limestone, phosphorous, and potassium (if low or medium) according to soil test. Then frost seeding clovers in the winter. Legumes also benefit from rotational grazing and fall grazing with adequate rest to ensure plant health and rooting vigor. Proper fall grazing stimulates clover growth the following spring.

Legumes pay for themselves. Well managed grass-legume stands produce as much forage as pure grass hay fertilized with 150 lbs. of N/acre. Animal production per head is greater on grass-legume pastures than straight grass pastures with yearling steers gaining an additional 0.25 to 0.33 lbs./day, backgrounded calves gaining an extra 0.50 lbs./day, and dairy cows produce 6 to 10 lbs. more milk/day. Cattle and sheep can eat more forage when it contains legumes. Increased consumption accounts for the increase in performance on forage containing legumes.

Supplementation with Mg

When cows in early lactation are fed forages testing less than 0.20 percent Mg, fed a supplement of Mg oxide (60% Mg) in mixture with salt, other minerals and grain. Insure that each animal gets about 2 oz. of Mg oxide (about 50 grams) each day. Commercial mineral mixes containing adequate Mg can do an excellent job reducing the risk of grass tetany.

Summary:

Grass forage grown on soils testing low or medium in Mg may produce forages that are at high risk of causing grass tetany especially when fertilized with N or K during cool, wet weather. The risk of grass tetany is reduced by the use of high Mg lime to increase soil test Mg when soil pH is low and by applying K and N fertilizer in late summer or early fall. Early spring applications of phosphorous will cause no problems since phosphorous is needed by plants to take up Mg. Growing legumes in place of using N fertilizer helps reduce the risk of grass tetany. Supplementation with Mg oxide will help reduce the risk of grass tetany when cattle are fed forages low in Mg. Soil test hay meadow and pasture soils and apply recommended lime, P, and K in the fall. Forage test hay crops to learn when Mg supplementation is needed during the fall, winter, and spring to optimize livestock nutrition and health.