Grass Tetany
Chris LeMaster, Livestock & Forages, Cherokee County
Is an ounce of prevention really worth a pound of cure?

South Carolina cattlemen understand the importance of year-round mineral supplementation. However, variations in plant mineral content, soil availability, and cow nutrient requirements can quickly result in deadly nutritional disorders. Grass tetany (hypomagnesemia) is caused by low blood Magnesium (Mg) concentrations and if untreated can result in 100 percent death loss. It more commonly occurs in lactating cows and ewes grazing small grains, ryegrass, and cool season perennial grasses in late winter and early spring.

Magnesium is essential for activation of metabolic pathways and enzymes, genetic code transmission, neuromuscular function, and skeletal development. Mayland and others report as much as 65 to 70 percent of total body Mg is stored in the bone, 15 percent in muscle, 15 percent in other soft tissues, and 1 percent in extracellular fluid (1988). Young calves are able to mobilize at least 30 percent of skeletal Mg during a deficiency.

However mature animals lack this ability and must rely on a steady supply of Mg from their diet to maintain adequate Mg concentration. As a percentage of dry matter intake, the National Research Council (NRC) recommended Mg requirements for a gestating cow and a lactating cow are 0.12 percent and 0.20 percent, respectively.

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Grass Tetany continued...

This is reflective of the increased Mg demand caused by lactation. Often the strain of early lactation is compounded by grazing lush, spring pastures that are low in Mg. Dolomitic lime can be used to increase soil Mg levels. However, the underlying problem may be one of availability rather than insufficiency. Waterlogged soils, low in oxygen, may prevent plants from taking up adequate Mg regardless of the soil content. Additionally, plant uptake may be prevented by a combination of high nitrogen, high potassium, and low phosphorous levels in the soil. Forage Mg concentration can vary greatly depending on plant species, soil Mg, stage of growth, season and environmental temperature. Legumes usually have higher Mg levels than grasses, but their growth is usually limited in late winter. Forages containing at least 0.2 percent Mg are less likely to cause hypomagnesemia. The decreased available Mg in early spring coinciding with a high Mg demand of early lactation makes a strong case for fall calving.

Clinical signs of grass tetany are not often observed until the animal is nearly dead. Initially, the animal may appear nervous or blind, exhibit muscle twitching, or stagger when walking. As hypomagnesemia progresses, the animal may go down on its side with muscle spasms and convulsions. Without intervention, death will occur. A subcutaneous injection of a 20 percent Epsom salt solution may increase blood Mg concentration. Remember, these symptoms do not provide a definitive diagnosis of grass tetany unlike a sample of blood and serum Mg concentration. In the event of suspected grass tetany, consult your veterinarian for other options and recommendations. Cows that develop tetany symptoms once are more likely to repeat the next year. Even without clinical signs, a Mg deficiency can reduce the cow's performance, which can be extended to the calf through decreased milk production.

The adage “an ounce of prevention is worth a pound of cure” certainly applies to mineral supplementation. For grass tetany, it’s closer to 20 g of Mg is worth any amount of cure. The NRC recommends 18 to 21 g Mg/day for lactating cows and 7 to 9 g Mg/day for gestating cows. This lower requirement of the gestating cow can largely be met by forages. Many year-round minerals will contain Mg. Magnesium toxicity is not a problem in beef cattle, but paying for excess Mg may be counter productive. Mineral supplements containing magnesium oxide (increased bioavailability) should be offered to cows daily, one month prior to calving and throughout the grass tetany season. Due to differences in cow intake, mineral content of forage, cow lactation, and other factors it is difficult to give a general recommendation on the minimum percentage of Mg that a mineral mix should contain. Generally, complete mineral mixes formulated for 3 to 4 ounces per day consumption should have at least 12 percent Mg, and for a lower intake mix the Mg content should be higher. Due to the poor palatability of magnesium oxide and maintaining other mineral concentrations, most “high-mag” mineral mixes are formulated for 4 ounces per day consumption. Most mineral companies have nutritionists that balance for profitability while meeting animal nutrient requirements, but your livestock agent or veterinarian are great sources for help in selecting a mineral supplement.

In conclusion, grass tetany incidences can be reduced by managing soil fertility and lime that ultimately may improve the forage mineral content. Also producers should consider moving the demands of lactation to the fall when Mg is often more available. However, offering “high-mag” minerals may be the easiest and most effective management solution. Nonetheless, a good look at your soil test, forage and feed analysis, and the tag on your mineral bag are the first steps in preventing nutritional disorders like grass tetany.

2016 Clemson Bull Test Sale Summary

The 2016 Clemson Bull Test & Heifer Sale on February 6th at the Garrison Arena shattered previous sale records. The 52 bulls brought $156,000 for an average of $3,000 per bull. The top 10 selling bulls averaged $4,300 per bull. In 34 Clemson sales since 1981, 1,634 bulls have been sold for $3,310,675.

Following the bull sale, 10 pens with 26 open, yearling heifers sold for $37,100 – an average of $1,426.93 per heifer.

A special thank you to all the consigners and buyers of bulls and heifers for making the 2016 CUBT sale offering one of the best ever.

Dr. Matthew Purns
Trailer Safety

Lindsey Craig, Livestock and Forage Agent, Upstate

If you have livestock of any kind, then you most likely have had to use a trailer at least once in your life. For many of us, having a good reliable trailer is as important as having a reliable truck, tractor, or working dog. Here are some tips to help keep your trailer in good, working order and to help you know what to watch out for if you borrow a trailer from someone else.

Know Your Limits

This includes the weight limit of the truck and trailer and your ability to drive the equipment. Start by consulting your vehicle’s manufacturers guide for the gross combined vehicle weight. Ensure you take into account the weight of the animals you load on the trailer as well as any other equipment and fuel you may put on the vehicle. Trailers should be loaded so that the majority of the weight is over the wheel axles with less than 15% of the weight placed near the tongue. If you are not an experienced trailer driver start with smaller trailers and practice driving them empty until you feel comfortable with driving backwards and forwards in a variety of road types.

Check Your Equipment

Perform a visual inspection of the truck and the trailer before you load any animals on it. Look at the wires connecting the lights and trailer brakes and the safety chains. Once the wiring is connected, make sure your trailer lights are working with your truck lights. Make sure you are using the correct size ball for the trailer hitch. Check the tires, including your spare tire, for proper inflation and tread. Also check the flooring of the trailer for any rotting or weak parts, and replace them as necessary. Put down rubber mats or other flooring to provide traction for the animals. Double check that there are no metal or sharp pieces sticking out of the trailer that could bruise or cut the animals. Make sure your truck battery is charged and working properly. Test your truck and trailer brakes once the trailer is connected to ensure your trailer brakes are not too powerful or not powerful enough.

After your inspections are complete, you are ready to put the animals on the trailer. Look at any distractions that might cause the animals to balk and refuse to load such as change in lighting, large step-ups, noise, or people. Also look for any gaps where the animal might try to squeeze out or jump over to get away from the trailer. Use adequate pressure to keep the animals moving forward and loading on the trailer without running them at the trailer. Too much pressure will lead to injuries for you and the animals. When loading a bumper pull trailer put the heaviest animals on the front and lighter animals on the back. If you are loading and tying the animal in the trailer, as is the case with most horses, make sure you use a slipknot that is easily reached in case of emergency. Tie their heads up so they do not get tangled in the lead line. Once the animals are loaded, make sure all gates are securely locked in place, and the back door is latched correctly. Be aware of all the vulnerable points on the trailer that could get you hurt, such as an area where you could get stuck between a gate and an animal. Always make the animals aware of your presence on the trailer so, you do not spook them and cause injuries.

Safe Driving

Once you start driving your truck and trailer, you have to be aware of everyone on the road. Many drivers do not know that a trailer will increase your need for stopping space or your need for longer acceleration lanes. Do not make sudden lane changes or stops if you can help it. Plan ahead for other vehicles by increasing your following distance and keeping track of other vehicles that may enter your blind spots. Take curves slowly and leave yourself plenty of space when parking so that you do not become boxed in. If your trailer has windows for the animals, do not allow the animals to hang their head out of the window while travelling. If the weather is going to be extreme, consider hauling the animals at a different time. During the summer, consider hauling in the mornings, which tend to be cooler. If there is ice and snow, wait until the roads have cleared so you do not run the risk of jack-knifing the trailer or getting stuck. Excessive rain or freezing temperatures can also affect the animals and travel conditions.

FREE BQA Training

Boehringer Ingelheim is sponsoring a free Beef Quality Assurance Training opportunity again this year.

If you need BQA certification, or are due for recertification, go to www.bqa.org and get BQA certified online for free.

Offer is good until April 15, 2016. South Carolina Cattlemen

Receiving certification/recertification by this training must send a copy of their certificate to:

Dr. Patty Scharko
Box 102406
Columbia, SC 29224-2406
pscharko@clemson.edu
Bull Selection
Amber Starnes, Livestock & Forges Agent, Upper Pee Dee

One of the most important decisions many producers must make is selecting the right bull for their operation. The task of choosing the correct bull can seem overwhelming, but will have lasting effects on the cow herd for many years.

A poor bull decision can leave the producer with an unfavorable calf crop. If a bull with a poor genetic base or weak performance is used, it could delay improvements in your herd for many years. On the other hand, good bull selection can increase the chance of a calf crop being more desirable and profitable.

When purchasing a new bull it is important to plan ahead. The bull should be purchased at least 45 days prior to breeding season in order to let the bull have time to adjust to a new environment and overcome the stress associated with sale and transport. Try to gather as much information about the bull’s performance as possible, such as birth weight, weaning weight, yearling weight, average daily gain, scrotal circumference, feed efficiency, etc. When considering a bull, decide if the bull will complement you cow herd. Study a combination of traits, and match market goals.

In doing this, ask yourself several questions about what type of calves you want to produce. Consider what production traits you want to improve. Will you be keeping replacement heifers? Remember, each parent contributes half of the genetic material of the calf, so making good matches is critical.

It is important to consider a variety of traits and not focus on just one. Often, traits are correlated to each other, whether it be positive or negative. An example of correlated traits is yearling and birth weight. As yearling weight increases so does birth weight, providing evidence that these two traits are genetically correlated. If you want to increase yearling weight, you have to also consider the importance of birth weight, especially if you are breeding heifers. This is due to the increased chance for dystocia (calving problems).

A breeding soundness evaluation (BSE) should be done by a veterinarian on a bull 12 months or older. A BSE will determine the breeding potential by physical exam, measurement of scrotal circumference, and evaluation of semen quality. A bull with poor semen quality will be of little value to your operation’s genetic plan. Consider the fact that the bull is responsible for half the genetics in 20 to 50 calves per year, whereas a cow contributes half the genetics for one calf per year. The scrotal circumference of the BSE is often an indicator of semen producing ability. Smaller scrotal circumference signals lower semen producing capacity. At one year of age, the bull should have a scrotal circumference of at least 30 cm. Morris, et al. (1993) showed a genetic correlation of 2.64 between scrotal circumference and age of puberty in females, indicating that yearling bulls with a larger scrotal circumference may sire daughters that enter puberty at an earlier age compared to bulls with smaller scrotal circumferences. Dr. John Spitzer, 1998, gives an example of this without equations. He states, by purchasing a bull with a scrotal circumference 4 cm larger than average, his son will have a 1 cm larger scrotal circumference, and his daughters will reach puberty 15 days earlier.

When selecting a bull, many factors must be considered in order to limit surprises in calf crops. Selection should be based on the needs and production goals for the operation. Selection should focus on several economically important traits and visual assessment in order to make genetic advancements in the herd.

References
How much does your hay storage cost?

Brian Beer, Area Livestock Agent, Lancaster County

Be careful how you answer that question. Cost and expense are two different things. Everyone worries about the expense of building barns for hay storage. Yes, barns are a big capital expense. Sometimes the method with the least expense ends up costing you the most. For this article we will review three different hay storage methods; uncovered outside storage, tarp covered outside storage, and a barn. Most farmers that store round bales of hay use at least one of these methods on their farm.

For this discussion we will assume the hay needs for a herd of 50 cow, weighing 1,200 pounds, fed for 150 days is 266 bales (133 tons) of bermudagrass hay. This also assumes the cows consume 2.5% of their body weight per day on a dry matter basis, and each bale of hay weighs 1,000 pounds and is 15% moisture.

Every storage method will have some hay loss. Table 1 shows the amount of hay loss associated with various storage methods. For this example we will assign a loss of 5% to barn storage, 10% to tarp covered outside storage (Stack pad, covered), and 30% to uncovered outside storage (on the ground).

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<tr>
<th>Hay Loss From Various Storage Methods</th>
<th>% of dry weight</th>
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<tbody>
<tr>
<td>Barn</td>
<td>2-5%</td>
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<tr>
<td>Tarp</td>
<td>5-10%</td>
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<tr>
<td>Stack pad Covered</td>
<td>5-10%</td>
</tr>
<tr>
<td>Uncovered</td>
<td>15-40%</td>
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<tr>
<td>Plastic Wrap</td>
<td>5-10%</td>
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<tr>
<td>On ground</td>
<td></td>
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<tr>
<td>Well drained, twine</td>
<td>20-40%</td>
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<tr>
<td>Well drained, net wrap</td>
<td>15-40%</td>
</tr>
<tr>
<td>Poor drainage, twine</td>
<td>30-60%</td>
</tr>
<tr>
<td>Poor drainage, net wrapped</td>
<td>30-45%</td>
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Source: Hancock, D. University of Georgia

Given that storage losses will occur, we need to have more hay production to account for these losses. Simply put, we will need more acres of hay to produce the amount of hay required by the herd. From Extension Bermudagrass Hay Enterprise budgets, the total cost of producing bermudagrass hay is approximately $512 per acre. Assuming a yield of 5 ton per acre, total cost will equal $51 per bale ($102/ton). We must account for the extra production required to make up for the lost hay during storage. Table 2 shows these calculations based on our assumed losses for each storage method, and comparing each to barn storage. From the calculations you will see that it take 2 additional acres of hay production to account for losses when stored under a tarp compared to barn storage. Hay storage outside and uncovered will require 10 additional acres of hay production to account for storage losses compared to barn storage. Additional production costs (when compared to barn storage) are $1,024/year for tarp covered storage, and $5,121/year for uncovered outside storage.

Each storage method has cost associated with them. Annual barn cost are $2,006 per year (initial cost of $7.00 per square foot for a 48ft.x 48ft. barn [approx. 210 bales capacity], 5.5% interest, and annual repair and maintenance at 2% of initial cost, and a 20 year life). Tarp cost is $390 per year (24ft.x48ft. tarp covers 60 bales). To cover the same number of bales as the barn, 4 tarps are required for on initial cost for $1,280 and a life span of 4 years, and no annual repair and maintenance. For our example, no annual cost were assigned for uncovered outside storage.

Now that we have established annual costs associated with each storage method, we can calculate the

<table>
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<th>Additional Hay Production Required Due to Storage Loss</th>
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<td>Required Tons of Hay</td>
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<td>----------------------</td>
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<tr>
<td>Barn (5% storage loss)</td>
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<tr>
<td>Stacked &amp; Tarp (10% storage loss)</td>
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<tr>
<td>Uncovered (30% storage loss)</td>
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Adapted from: McKinley, T. University of Tennessee

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total annual cost (additional annual production cost plus annual storage. In Table 3 you can see the comparison. Outside storage has a total annual cost of $3,115 higher than the total cost of barn storage. Tarp covered hay has a total annual cost of $592 less than barn storage. Outside uncovered hay is $3,707 higher than tarp covered hay annually. This example does not account for the additional labor required to handle hay tarp during covering and uncovering the hay stack.

In conclusion, if you are currently using uncovered outside storage for your hay, building a barn can save you $3,115 per year. At that level of savings you will be able to pay off the barn used in this example in 5½ years. There is some truth in the old saying “you will pay for a barn, whether you build it or not” with uncovered outside storage.

If you currently use tarp, you will need to determine if it is worth $592 a year not to handle hay tarp. Some farmers that use tarp will tell you that they would gladly spend $592 to quit messing with tarp, because they can be aggravating to deal with, especially while feeding hay.

Regardless of the method, it is clear that it is economically worth the expense to cover stored round hay bales, either in a barn or with a hay tarp.

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<thead>
<tr>
<th>Table 3. Production and Storage Cost of Various Hay Storage Methods</th>
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<tbody>
<tr>
<td>Annual Production Cost</td>
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<td>($)</td>
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<tr>
<td>Barn</td>
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<tr>
<td>Stacked &amp; Tarp</td>
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<tr>
<td>Uncovered</td>
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References: