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GRAZING NEWS

MARCH 2013

A publication of the Master Grazer Program

MINIMIZE AND REDUCE SOIL COMPACTION

UPCOMING EVENTS

- **Spring Grazing School Princeton, KY- April 17-18, 2013**
- **Western KY Pasture Walk- ,KY– June 6, 2013**
- **Advanced Grazing School – Princeton, KY– June 18, 2013**

INSIDE THIS ISSUE:

Soil compaction is a common problem that many producers face but that is often overlooked. Significant soil compaction can also reduce forage yields and slow forage establishment which, in the long run, costs money. Management practices can be used to reduce and correct this problem while improving soil conditions.

Soil compaction negatively affects the soil and growing vegetation. Soil particles are pressed together reducing pore space and aeration. The damage to the soil structure reduces the soils' ability to hold and conduct water, nutrients, and oxygen. Rate of water infiltration is decreased and more water is lost to runoff. Other effects of compaction include decreased organic matter, reduced microbial activity, poor drainage, increased erosion, and nutrient leaching. These undesirable effects on the soil directly affect plant growth. Roots have increased difficulty when penetrating the soil which often results in reduced root growth and reduced ability to take up water and nutrients. The decreased aeration and gas exchange can hinder root metabolism. Compacted soils can slow forage establishment, cause short and stunted plants, decrease drought tolerance, and reduce overall yields. Severely compacted areas often have sparse growth or are bare due to these problems.

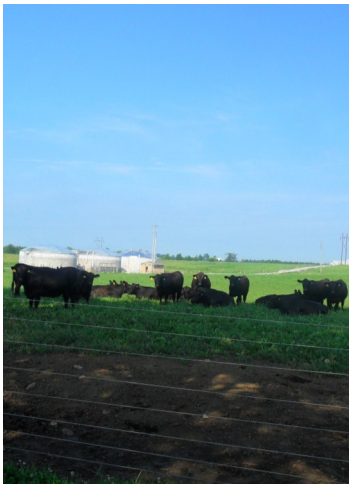
Soil compaction can be created from both natural causes and operational functions. Severe compaction is almost always created through management practices. Natural compaction is produced by raindrop impact which can form a thin crust on the soil surface. This crust is usually less than ½" thick but may reduce seedling emergence. Management sources come from traffic and tillage. Wheel traffic is a main contributor of soil compaction issues. As farm equipment has become heavier over time and producer's time has become more limited, this problem has increased. Tillage operations at the same depth over time can also cause severe compaction of the soil layers below tillage depth. Wet soils are the most susceptible to compaction. Spring planting and haying operations are often performed on wet soils. Busy schedules and smaller windows of time to perform these procedures make waiting for optimal soil moisture difficult. Hoof traffic is another cause of compaction, especially near waters, feeders, and gates.

Keeping a thick forage stand will help prevent soil compaction

Simple steps can be taken to prevent and reduce the severity of soil compaction. Knowing the soil type and soil properties is useful when making management decisions. Potential for compaction is increased in soils high in clay and low in organic matter. Building organic matter in the soil promotes development of good soil structure while decreasing soil bulk density. Keeping a thick stand of forages, increasing manure distribution, and reducing tillage can build soil organic matter. Reducing or eliminating tillage, which breaks down the soil structure, reduces organic matter and microbial activity, and reduces plant residue on

MINIMIZE AND REDUCE SOIL COMPACTION (CONT.)

soil surface, is extremely beneficial. If tillage is necessary, alter tillage depth over time. Controlling and reducing wheel traffic, especially on wet soils, is vital. Planting a tillage radish in severely compacted areas is another way to reduce compaction. Not only does this crop provide thick ground cover, but its large tap roots can penetrate compacted soils. Plant a "forage type" radish if you will be grazing. These have almost as much root as the Diaken (or tillage) type but have more top growth for grazing. Forage radishes are often planted in a mixture with annual ryegrass or cereal rye. Consider installing high-traffic pads around waters, feeders, and gates. Regularly moving feeding areas can prevent these areas from becoming severely compacted. Also, consider using a sacrifice lot during extremely wet periods. For more information on high-traffic pads see "Using Soil-Cement on Horse and Livestock Farms" http://www.ca.uky.edu/agc/pubs/id/id176/id176.pdf. For information on the use of sacrifice lots see "The Use and Renovation of Sacrifice Areas" http://www2.ca.uky.edu/grazer/Jan12_Sacrifice_Areas.php; "Using Dry Lots to Conserve Pastures and Reduce Pollution Potential http://www.ca.uky.edu/agc/pubs/id/id171/id171.pdf; and "High Traffic Area Pads for Horses http://www.ca.uky.edu/agc/pubs/id/id164/id164.pdf.



Shaded areas and other high traffic areas are prone to soil compaction

START THE GRAZING SEASON OFF RIGHT

It is tempting to turn livestock back onto pastures as soon as forages start to green up and produce new growth. Harvesting forages too early or grazing down too low can reduce stand productivity and longevity. Allow plants sufficient growth time prior to grazing as well as during rest periods to maximize forage quality, yield, and stand persistence. Increased chance of overgrazing is another issue when grazing short forages. Grazing too early not only hurts future forage production but can also reduce livestock performance. Loose stools are common when grazing this young forage that is highly digestible and low in fiber content. Often, during this time, available forage is sparse which may increase traveling distance and reduce intake. Increased traveling and reduced bite mass may lead to reduced gains and reduced production.

Ideal grazing heights can vary depending on forage species. The following table shows recommended grazing heights for forages common in Kentucky.

Species	Start Grazing	End Grazing
Orchardgrass	8-10"	3-4"
Kentucky Bluegrass	8-10"	1-2"
Tall Fescue	8-10"	3-4"
Alfalfa	Bud Stage	2-3"
Annual Ryegrass	8-10"	2-3"
Bermudagrass	6-8"	1-2"
Other Cool-Season Grasses/Legumes	8-10"	3-4"
Warm-Season Annual Grasses	20-24"	8-10"
Warm-Season Native Grasses	18-22"	8-10"

START THE GRAZING SEASON OFF RIGHT (CONT.)

While it is important not to overgraze pastures, when cool-season forages are growing rapidly in the spring, livestock may not be able to keep up with grazing. Too keep forages from becoming too mature, one possible option is to harvest some fields for hay while using others strictly for grazing. If not harvesting for hay, pastures should be mowed to keep forages from becoming too mature and to control weeds. Moving livestock more quickly may be another option. It is important for each individual to consider all costs when deciding to harvest pastures for hay.

Another consideration in the early spring is the livestock's change in diet. Mixing dry hay into the diet when shifting to lush pastures can allow animals to become accustomed to the change. Also, be sure that livestock are supplied with adequate minerals at all times. Keep in mind that in early spring, a high magnesium, or high "Mg" mineral should be available to reduce the risk of grass tetany and fed until daytime temperatures are consistently above 60°F.

The beginning of the grazing season is a time to be very aware of both pasture and animal health. Start the grazing season off right by adapting your system to the current conditions. Turning livestock out on pastures before the forages are allowed adequate growth may decrease forage production for the remainder of the year. On the other hand, livestock may not be able to keep up with forage growth in the spring when forages are growing rapidly. Harvesting this forage for hay, mowing pastures, or moving animals more quickly are options to keep forages from becoming too mature and to control weeds. Early spring management of livestock and pastures can help to maximize success and production for the remainder of the grazing season. For more details see "Rotational Grazing" at http://www.ca.uky.edu/agc/pubs/id/id143/id143.pdf.

SOIL TESTING

Fertilizer is one of the main expenses in a productive grazing system. It is important to apply fertilizer and lime in accurate amounts for best forage production and financial and environmental reasons. Performing a soil test on pastures and utilizing the results to evaluate pasture fertility is strongly advised. Analysis of a soil sample will determine nutrient content of the soil including phosphorus, potassium, magnesium, sodium, sulfur, manganese, copper, and zinc. Soil pH, organic matter, and exchangeable acidity will also be included in the results. These results are used to decide what to apply and how much to apply.

Almost all farmers apply too much or too little lime and/or fertilizer when not using a soil analysis to calculate the amount needed. Applying only what is needed is essential for best plant growth at the lowest price. If too little is applied, stand yield and quality will suffer. If lime is over applied, soil pH will rise which can make some nutrients less available to the plant and cause unfavorable growing conditions. Over application of fertilizer can also be detrimental to the environment and cause contamination of surface and ground water. Performing a simple soil test can help to ensure the correct amounts of lime and fertilizer are applied to pastures.

Soil tests should be taken every 3 to 4 years in pasture areas. Separate samples and analysis should be done for pastures and unique areas within the pasture which may have substantial variances in nutrient content. For example, a feeding area or shaded area where livestock might spend extended periods of time, build up manure and may have much higher nutrient levels. Spring and fall are the best times to perform a soil test. Earlier in the season is ideal so there is time to purchase and apply fertilizer according to test results. A soil probe, spade and knife, auger, or trowel can be used to collect samples. Samples at a depth of 3 to 6 inches should be taken in 10 to 12 different areas to give a representative sample. All equipment used to take the sample should be clean to avoid contamination that might obscure results. Samples need to be thoroughly mixed in the bucket. Soil sample bags should be filled with 1 to 2 cups of soil and should be clearly labeled. The name given to the sample needs to be easily recognizable to the area it was taken from to avoid confusion. These bags can be obtained from your local extension office. Samples can be returned to the county extension office to be shipped to the testing lab.

SOIL TESTING (CONT.)

County agents can assist in interpreting results and developing a fertility program. For more information on how to take a soil samples, refer to AGR-16: Taking Soil Test Samples.

Fertilizer and lime are usually over or under applied when a soil test is not used. Each unique area should be tested separately and fertilizer and lime should be applied accordingly. Consider test results, history of pasture, grazing practices, and forage species when planning fertilizer applications. Spending only $5.00 to perform a soil test can save money spent on excess fertilizer and can reduce negative environmental effects. It will also reduce loss due to poor yields caused by inadequate fertility. Perform a soil test to determine correct fertilizer and lime applications.

2013 SPRING KY GRAZING SCHOOL: APRIL 17-18,2013

The spring grazing school will be held on April 17-18, 2013 at the UK Research and Education Center in Princeton, KY. This two-day program will include hands-on exercises such as building temporary paddocks and watering systems, assessing pasture production, and designing your own grazing systems. Classroom sessions include a variety of topics based on forages, animal health, and grazing systems. Emphasis will be put on spring and summer grazing options for ruminant species.

This program is open to anyone. Past participants have included everyone from new farmers to experienced graziers and all have gained new information and practical skills to implement on their operations. All grazing school participants have indicated that attending this program motivated them to make changes to their grazing systems to improve their operations and increase production.

It is necessary to pre-register for the grazing school as enrollment is limited to the first 45 who register. The $50.00 registration fee includes all materials, grazing manuals, breaks, and lunch both days. To register, contact Land Dale, at (859)278-0899 or Land.Dale@uky.edu. A program and additional information can be found at http://www2.ca.uky.edu/grazer/Documents/Princeton_2013_brochure.pdf.

Grazing School participants set up temporary paddocks and watering systems

IMPORTANT REMINDERS FOR MARCH

- Soil test to determine fertilizer applications
- Heat stress starts as early as May- plan for shade and cool water in every paddock
- Reduce damage to forages and soils by moving feeding area and livestock often
- Remove animals from extremely wet pastures- consider use of a sacrifice area or feeding area
- Control competition from weeds and undesired forages where new seedlings are emerging
- Inspect and prepare water systems to supply water to every paddock
- Continue to provide livestock access to a high magnesium, or high Mg, mineral to reduce risk of grass tetany
- Continually observe herd for signs of bloat and grass tetany
- Mow pastures for weeds and seedheads if needed

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