



FORAGE BITS

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Getting Hay Equipment Ready

Source: University of Arkansas Press Release. www.uaex.edu

Fayetteville, Arkansas (April 11, 2014)--Making hay is an expensive process and poorly maintained equipment can add unwanted expenses and downtime, said Dirk Philipp, assistant professor for the University of Arkansas System Division of Agriculture.

"The equipment itself and repairing broken equipment is costly as well, so efforts to maintain the equipment will pay off long term," he said. Equipment for haymaking includes mowers, balers, rakes, tedders, and hay-moving equipment.

Philipp offers a pre-season maintenance checklist for each piece of equipment.

Mowers:

- Check the disk blades and replace knives if needed included other parts such as wear plates or guards or whichever safety parts should be replaced or checked along with the knives.
- Check on the conditioning rollers and adjust the spacing as well as roll timing. Properly maintained conditioners crimp the forage so drying time is minimized.
- Grease bearings and other moving parts according to the equipment manual. Worn bearings can heat up. Use a laser thermometer to find the hot bearings.
- Worn out bearings on silage choppers and balers can heat up enough to cause fires.
- Change the oil on the gearboxes in mowers and balers.

"Keep your machines clean from plant parts such as chopped or cut forage," he said. "Oil leaks can be detected more easily this way."

Check for correct operation of the disk blades.

"These are driven and synchronized through a gearing mechanism," he said "In some rare instances this gearing can malfunction, causing costly repairs, so make sure the mechanical parts work properly and are serviced regularly."

For balers, similar maintenance recommendations apply:

- Check the equipment manual for required service.
- Inspect the belts and tension mechanism; repair belts if necessary to maintain uniform tension.
- Do a test run by warming up the equipment to check for improperly working components.

Tedders and rakes may not be as mechanically complex as mowers and balers, but still need attention with respect to proper functioning:

- Many times rake or tedder teeth are misaligned or broken, replace those or bend back into shape if possible.
- Setting the correct height on rakes and tedders minimized leaf loss while optimizing forage pick-up.
- Rakes and tedders likely need readjusting going into the new hay season. Check to see if the pick-up height is even across the width of the rake or tedder.

"For all equipment, refer to the equipment manual for maintenance intervals, placements of grease fittings, specification of replacement parts, and adjustment procedures," Philipp said. If the manual is lost, check with the manufacturer or look online.

Cattle Producers Need to Watch Out for Grass Tetany

Source: University of Kentucky Press Release. www2.ca.uky.edu

Lexington, Kentucky (April 3, 2014)--With spring finally arriving pastures are beginning to green up. For most cattle producers, that is a welcome event that leads to less reliance on feeding hay. But University of Kentucky College of Agriculture, Food and Environment specialists said this is also the time for producers to watch out for and prevent a condition called grass tetany in their cattle.

"Grass tetany is also known as grass staggers, lactation tetany or hypomagnesemia," said Michelle Arnold, UK extension veterinarian. "Grass tetany is a metabolic disorder caused by reduced magnesium levels in the animals' blood."

In general, the condition affects older, early lactation cows, but it can also affect dry cows, young cows and, in rare cases, growing calves.

"You should watch out for cattle that show symptoms such as nervousness, lack of coordination, muscle spasms and staggering. This may lead to convulsions, coma and death," Arnold explained. "If you suspect cattle are showing signs of grass tetany, you need to contact a veterinarian because early treatment can save animals."

While grass tetany can occur in fall and winter, it most frequently occurs in spring with young, cool-season grasses and small grains that are utilized as forage.

"This year we have the same chance of cattle having problems with grass tetany as in previous years," said Donna Amaral-Phillips, UK dairy specialist. "With the later start in grass growth this year, grass tetany may occur later in the spring, but a lot of it comes down to the weather as we proceed."

While there may not be a higher incidence of the problem this year, managing it may be more economically significant than past years.

“The high-value of beef cattle this year makes managing the risk of grass tetany even more important from an economics point of view,” said Jeff Lehmkuhler, UK beef specialist.

“Cull cows are currently in excess of \$100 per hundred-weight and feeders are around \$1,000 to \$1,200 per head. So, minimizing the risk is relatively inexpensive and definitely worth the cost.”

Feeding magnesium or “high-mag” mineral supplements is the best way to reduce the occurrence of grass tetany. Most feed stores carry the supplements. Ideally producers need to start feeding those supplements 30 days before spring grass growth. A free-choice high mag mineral, with a target intake of 4 ounces, should contain 12 to 15 percent magnesium from magnesium oxide.”

Obviously prevention is the key; feeding magnesium supplements before cattle begin to graze early spring grass will help to avoid it altogether,” Arnold said. “Response to treatment after symptoms begin is not always good and largely depends on the time between symptom onset and treatment beginning.”

“Reducing the risk of grass tetany in grazing cattle involves using a balanced mineral supplement offered to lactating cattle free-choice. Producers must ensure the cattle consume the mineral product at or near the suggested intake level on the feed tag,” Lehmkuhler recommended. “Producers should not use straight white salt during this time of the year, as it reduces the intake of the complete mineral product and magnesium.”

He indicated the key to using free-choice products was to find a product that was palatable and to manage the mineral feeders to ensure cattle have access 100 percent of the time.

“It is a fact that magnesium absorption is dependent upon having adequate sodium in the forestomach, but this does not preclude the necessity to provide elevated magnesium in the supplement,” he said.

Other management strategies, in addition to supplementing magnesium, include soil testing and applying fertilizer based on soil test results and using no more potassium than recommended. Lehmkuhler said research in Missouri has shown that phosphorus fertilization has increased plant magnesium levels in tall fescue.

Producers can also graze cattle on legumes, which are high in magnesium, although their growth is often limited in early spring.

Arnold urged producers to contact their county [extension](#) agents and local veterinarians for more information.

Summer Annuals Help Close Seasonal Gaps in Forages

Source: University of Arkansas

Press Release. www.uaex.edu

Fayetteville, Arkansas (April 25, 2014)--After an uncharacteristically brutal winter, spring in Arkansas is bringing green growth to the state. If cattle and other livestock have grazed through almost all forage on pasture land, there is a resource available for the upcoming summer months.

Summer annuals such as pearl millet and sorghum sudan can produce forage in a short time during June, July and August. These forages provide a way to close gaps between seasons when the availability of tall fescue becomes dormant in the summer months.

“Summer annuals become very productive by responding to high summer temperatures and moisture,” said Dirk Philipp, assistant professor for the University of Arkansas System Division of Agriculture. “When moisture is short, these annuals are more drought resistant than the perennial forages. They can be grazed or harvested for hay or silage, and they work well in double-crop situations after small grain harvest.”

According to Philipp, grazing farms can devote specific areas to some summer annuals to produce more forage during the summer slump period when cool season grasses are less productive. Other advantages of summer annuals include efficient use of water, fast growth and high yields, use in grazing or haying, and responsive to nitrogen fertilizer.

To get a good and reliable stand, follow these tips:

- A well-prepared and settled seedbed is mandatory.
- Select a field that is level, if the emphasis is hay, and has well-draining soils.
- Consider a field that can be used long-term for summer annual crops in rotation with winter annual crops -- preferably legumes to add plant organic matter -- and have grazing available early in the year.
- Disk the field to break up the sod, control weeds and turn under organic matter.
- Firm up the seedbed by rolling or culti-packing. This is important because if the soil is too loose, the seed can be covered with too much soil and have problems emerging. Follow with culti-packing or rolling to firm up seedbed.

- Let the seedbed settle a few days, and try to work around heavy rains or thunderstorms as they can wash soil away. This may expose some seeds while covering up others with too much soil.
- Fertilize strictly according to soil test reports; over-fertilization can lead to high nitrate levels in pearl millet.
- Seeding rates for tillage-based establishment are 10-15 pounds per acre for pearl millet and 15-20 pounds per acre for sorghum sudan.

Is It Time to Think about Renovating or Planting a New Pasture or Hay Field? Part 1: The Pre-Planning Process

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Over the years since I first came to Delaware, I have received numerous requests concerning over-seeding or renovating pasture and hay fields. Unfortunately, these requests usually come about just before someone wants to actually plant. In reality, producers should begin considering the process as much as a year ahead of the actual time that they want to plant a field. Since our fall plantings of forage crops seem to perform better than spring plantings, it's a good time to begin a discussion of the process. Often, we find ourselves moving into mid- to late-fall without having taken the time to really consider all decisions that have to go into improving the odds that the planting will be successful. Seed costs alone can equate to more than a hundred dollars per acre in investment expense; and, if we really take into account all the variable costs, a new pasture or hay field can easily represent an investment of hundreds of dollars per acre.

So in the pre-planning process, what's first? I know many get tired of hearing the phrase but testing the fertility of your soil far ahead of time is still the number one issue. The proper sampling depth is 0 to 4 inches in fields where you will be using a no-till drill to seed the forage and on fields that you do not plan to use deep tillage and have not been applying significant quantities of commercial nitrogen (N) fertilizer. In these instances, you will not be incorporating lime to neutralize acidity from the N fertilizer or incorporating large amounts of phosphorus [P or (P₂O₅)] or potassium [K or (K₂O)] fertilizer. Your expectation is that the soil test will indicate that the soil pH is in the 6.0 to 6.8 range and the P and K levels are in the medium to optimum range. If your expectations do not prove true and the pH is low enough to require several tons per acre of limestone or the P and K levels are low to very low and the fertilizer and lime needs to be mixed into the soil thoroughly, you will need to change plans and consider some type of tillage to incorporate fertilizer and/or lime.

If you have used large quantities of commercial N fertilizer in the past, you really should take both a 0-2 inch depth sample for determining the soil acidity in the upper soil layer as well as a 0 to 4 inch depth sample for nutrient content (phosphorus, potassium, calcium, magnesium and other essential elements). If you are unsure when limestone was last applied to the field, sampling both depths is a good approach since it will provide you with more information about the nutrient status of your field.

The reason for this distinction is that the ammonium or urea N forms that are applied as fertilizer are converted by soil bacteria into nitrate through a process called, nitrification. In this process, the soil bacteria oxidize the reduced form of N and release hydrogen ions that cause the soil to acidify. Since the N is all surface applied, the release of acidity near the soil surface can create a condition known as 'acid roof' where the top inch or two of soil is much more acidic than the deeper layers of soil. A second reason involves the very slow movement of limestone down through the soil. Studies on pastures in Connecticut many decades ago showed that lime moves downward at a rate of about 1 inch per year. Therefore, it takes a very long time to have an impact on the entire rooting zone of the forage grasses and legumes.

In fields where tillage is planned prior to establishing a forage crop, the traditional plow layer sample (0 to 8 inches) for both soil pH (acidity) and essential nutrient status is the appropriate choice. If the soil sample indicates that the soil must be limed, apply the recommended amount of limestone and work it into the soil as soon as possible to allow time for the limestone to neutralize soil acidity before planting time. If the weather after lime application and incorporation remains dry, the limestone will not completely dissolve and neutralize the soil acidity. I recommend that producers take a second soil test before planting in late summer or early fall to determine if any additional lime is needed. Additional agricultural lime and the recommended P₂O₅ and K₂O fertilizer as well as any other needed nutrients can be applied and worked into the soil shortly before planting the field.

Everyone asks the question of whether to apply N at the time you plant a new field or seed a field you are renovating. My preference is that you should wait until the new grass is several inches tall and has enough biomass and roots to compete for applied N and store any extra N for future growth. Very small forage seedlings use and need very little N, no more than a couple of pounds N per acre, until they reach 2 to 4 inches in height. Often the residual N from organic matter mineralization during the summer, will supply the small amount of N the seedlings require. Once the forage plants have enough leaf area to capture the sun's energy and convert it into more plant tissue or into sugars for storage, the demand for N will increase significantly. When forage seedlings are very small, weeds or current vegetation in renovated fields are likely to be better able to compete with new forage seedlings for N, light, water, and other nutrients.

Although annual weeds and/or current vegetation will be present when N fertilizer is finally applied to the new seedlings, the perennial forage seedlings will be in a better competitive position to compete for the components needed for growth and establishment. Summer annual weeds that germinated with the forage crop will be killed at the first fall/winter frost and provide the forage plants with more space, sun, water, and nutrients.

Now that you've taken care of any soil fertility issues that can reduce the chance for a successful stand, the next decision involves choosing the right seed to plant. I've had the opportunity over the years to read many seed labels on various pasture mixes offered for sale. I understand the convenience of buying a prepared pasture mix and the allure of these mixes. The buyer often assumes that the seller has spent the time and energy studying the issue and has come up with a mixture that in their opinion and experience has the best chance of success. I certainly can't speak to motivation of the seller but keep in mind that from a business point of view, seed that is mixed and offered for sale needs to be sold over as large an area as possible to justify the expense of wholesaling large quantities of seed as well as blending, packaging, and labeling the seed. In my opinion, this nullifies the expectation that the seller has designed the mix for your particular field or location.

After looking at the species of forages used in the prepared pasture mixes, I find that these mixes are more often a shotgun approach to seeding. A bit of everything is included in hopes that something will establish in all areas of the field. Usually they contain a quick establishing grass such as annual or perennial ryegrass that can germinate in as little as 5 to 7 days so the buyer can feel comfortable that the new seeding is successful. Horse pasture mixes usually contain the feel-good or highly recognized grasses such as timothy and Kentucky bluegrass along with some orchardgrass and probably an endophyte-free tall fescue to provide more permanent cover. Finally, a legume such as white or ladino clover, red clover, or alsike clover will be in a pasture mix to provide the N-fixing legume everyone wants in a pasture.

The convenience of these mixtures comes from not having to mix them yourself before you fill the seed drill. The allure comes from not having to make a decision other than how much seed per acre to plant and not having to choose individual species to plant. For most buyers, the convenience and allure end up costing them many, many dollars per acre in seed costs for seed of grasses that won't survive in grazing situations or won't survive more than a season or two at best or will be unproductive during the middle of the summer grazing season.

So what should you do? I prefer going with a simpler mixture using forage species that are adapted to our region. In most cases, the only species that will survive for many years in our transitional zone climate is tall fescue. Because of endophyte (an fungus growing in some tall fescue plants) issues, many growers have tried the endophyte-free tall fescue varieties and some have had success with keeping a stand for many years while others have seed stands decline or disappear quickly.

The newest chapter in this issue has been the development of novel or friendly endophyte tall fescue varieties. The novel endophyte tall fescue varieties do not produce the chemical compound (alkaloids) that interfere with animal performance but still provide benefits to the tall fescue plants helping them survive in many stressful environments. A limitation still in evidence with these new tall fescue varieties is that horse owners who breed horses do not all accept tall fescue as a feed source for their animals. This can limit tall fescue's acceptance.

What other species can you include in your simple mixture? Orchardgrass is another grass that many producers like to include in a pasture mixture but you should be aware that many orchardgrass fields are failing due to a disease/insect/environment/management complex interaction we've been calling orchardgrass decline. If you choose to include orchardgrass, keep it as a small proportion of your mixture. The other grass to include at least on heavier soils and in the northern portion of Delaware is Kentucky bluegrass. Be sure to include several varieties of the Kentucky bluegrass to help with disease resistance. It will be most productive early in the year (early spring to early summer) and mid- to late-fall. Finally, add in a legume to help with providing N for the grass to use as well as to improve the protein and forage digestibility of the pasture. For grazing, most people prefer a ladino-type of white clover. Although slobbers (the animal produces excessive amounts of saliva) is a potential concern with all clovers, it seems to be mostly associated with red clover. Often included in commercially sold horse pasture mixtures, alsike clover is known to cause photosensitivity (sunburn) and sometimes liver injury especially in horses and should not be included in your pasture mix.

One of the new grazing-types of alfalfa should be considered especially by beef producers. These varieties tolerate rotational grazing systems and produce well during the summer period in most years. Alfalfa is very deep rooted and can be a great addition to pastures and provide more and higher quality forage in the summer grazing period.

You will find it useful to talk to your seed dealer about the various varieties of each species that are available. Once you decide on the varieties to use and you purchase seed, you can mix your own pasture mix by either purchasing or renting a cement mixer and combining the seed in the proportions you decide are best for your purpose and field. Since many legumes now come pre-inoculated with the N-fixing bacteria and often are coated with a fine limestone, do not over mix the seed and when you re-bag it store it where it is protected from high temperatures and humidity. Stored properly, the seed can be held over the winter if something prevents you from seeding this fall but you should plan to plant as soon as possible after purchasing seed. Not only are the N-fixing bacteria alive; but, if you use a novel endophyte tall fescue variety, the endophyte has a limited storage time (around a year under good conditions) before it needs to be planted. Although tall fescue seed will germinate after longer storage times, the endophyte fungus may no longer be alive. The fungus only lives in the plant and is not soil-borne.

In the next article coming out later this summer, I'll cover some of the other management issues to consider such as planting date.

Boost Spring Pasture and Hay Field Productivity

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Many equine and animal producers are running close to the edge this year with hay supplies since the frequent and heavy rainfall last summer either resulted in lower quality hay or prevented hay making completely. Grazers as well as hay producers should consider fertilization of their fields as soon this spring as soil conditions permit. The heavy rainfall last fall and over the winter months has leached nitrogen (N) and sulfur (S) from the upper rooting zone in pastures and hay fields.

Nitrogen applications boosts the growth rate of the grass component in pastures and hay fields and with the very cold start to spring this year and the short hay supplies most producers will want to get their pastures and hay fields off to a rapid start. At least in the upper portion of Delaware, pastures and hay fields are just beginning to green up and start spring growth. With warmer temperatures and drier conditions expected until Tuesday of next week, now is the time to fertilize pasture and hay fields. Many producers will be using urea (46-0-0) as their primary N source but since S has leached out of the upper rooting zone in the soil, I suggest that producers consider applying at least a portion of the required N as ammonium sulfate. Application of both nutrients will ensure that the proper N to S ratio is available so that the sulfur containing amino acids are produced by the plant. Ammonium sulfate is the most acidifying of the N fertilizers but the proper N:S ratio is required by pasture plants.

If the pasture or hay field has a significant amount of legume (white, red, or alsike clover or alfalfa) present, you should limit the N rate to 20 to 30 lbs N/acre and in that case I would use 100 percent as ammonium sulfate. For pure grass hay fields or pastures with less than 25% legumes, apply about 50 lbs of N/acre per ton of expected yield. Apply about half of the N from ammonium sulfate but once the S application rate reaches about 40 lb S/acre change back to pure urea or other N source. You are unlikely to see a response past the 40 lb S/acre/year rate.

WEIGHT PER BUSHEL AND NUMBER OF SEED PER POUND OF SELECTED FORAGE CROPS

Forage crop	Approx. lb/bu	Approx. no. of seed/lb
Alfalfa	60	227,000
Annual lespedeza	25	238,000
Annual ryegrass	24	224,000
Barley	48	14,000
Bermudagrass (hulled)	40	2,071,000
Chicory	60	349,000
Crimson clover	60	150,000
Foxtail millet	50	213,000
Hairy vetch	60	16,000
Kentucky bluegrass	21	1,440,000
Korean lespedeza (hulled)	59	238,000
Oats	32	16,000
Orchardgrass	14	416,000
Pearl millet	48	82,000
Perennial ryegrass	24	330,000
Rape	50	156,000
Red clover	60	272,000
Rye	56	18,000
Sericea lespedeza (hulled)	60	372,000
Sorghum	50	24,000
Sorghum-sudan	48	35,000
Striate lespedeza (Kobe)	25	200,000
Sudangrass	40	43,000
Switchgrass	55	280,000
Tall fescue	25	227,000
Timothy	45	1,152,000
Triticale	48	15,000
Wheat	60	11,000
White clover	60	768,000
White sweetclover	60	259,000

Source: Adapted from Southern Forages. 2007. Ball, D.M., C.S. Hoveland and G.D. Lacefield. IPNI, Norcross, GA.

Alfalfa hay needed for export test shipment

Source: Les Vough, Forage Agronomist, Southern Maryland RC & D

An export company based in McLean, Virginia, is looking into the feasibility of exporting alfalfa hay from the Mid-Atlantic Region to China. A lot containers leave Norfolk and Virginia Beach empty on their way back to China. This company sees potential in filling some of those containers with **high quality alfalfa hay** destined for China's growing dairy industry. The quality must be comparable to hay shipped to China from the West Coast – a bit of a challenge in the Mid-Atlantic Region but not impossible.

Chris Teutsch, Forage Specialist at the Virginia Tech Southern Piedmont Agricultural Research and Extension Center in Blackstone, is leading the effort to work with the exporter to put together a test shipment. The test shipment would be 50 tons from each Virginia, Kentucky, Pennsylvania and **Maryland/Delaware**. What I need is the names of alfalfa growers who do an outstanding job of putting up top quality alfalfa hay suitable for lactating dairy cows. The 50 tons needed from Maryland/Delaware should come from several growers, not just one, as they are looking for multiple sources. The alfalfa must be **Non-GMO**, so Roundup ready is out for this market. It should also be straight alfalfa, not an alfalfa/grass mixture.

If the test shipment is acceptable and the company moves ahead as planned, they are looking at long-term contracts with growers. Growers would be paid a premium price for hay with a \$50/ton signing bonus for entering a contract.

Ultimately hay will probably have to be trucked to Front Royal, VA, where it will be recompressed and loaded into containers and onto rail cars at the inland port facility there. But for the initial test shipment, the hay will be picked up from the farm.

If you have dairy quality alfalfa available for sale or will have once we get into hay making season, please get in touch with me ASAP so that I can put together a list of possible sources for the test shipment. The best way to get in touch with me is via e-mail, vough@umd.edu, or by cell phone, 240-678-0274.

There is also interest in obtaining hay for export into the Caribbean Islands. This inquiry came through the Maryland Department of Agriculture and I have limited information but I think the type of hay for this market is not limited to alfalfa and quality demands may not be as high. If you are interested in more information on this market, let me know and I will put your name on this list.

Forage Bits is a publication of the Maryland-Delaware Forage Council. It is compiled and edited by Ben Beale, Agricultural Extension Educator-St. Mary's Co. and Richard Taylor, Extension Agronomist, University of Delaware. Please send any comments, questions or submissions to Ben at the St. Mary's Extension Office: PO Box 663, Leonardtown, MD 20650, fax 301-475-4483, phone 301-475-4484 or e-mail at bbeale@umd.edu

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