MISSISSIPPI STATE UNIVERSITY EXTENSION SERVICE

Preparing for Spring and Early Summer Planting

Volume 4, Issue 2

Rocky Lemus
Extension Forage Specialist

February 2011

Visit us at: **http://mississippiforages.com**

Early spring provides us with a window of opportunity to get a new forage stand established. Spring seeding is normally done from March to mid-May in Mississippi. This planting window is recommended since the end of the spring planting season is limited by warmer temperatures, low soil moisture, and hot soil surfaces in the summer months (especially June, July and August). These conditions could limit seedling emergence, development, and growth since most forage seedlings are emerging and growing root systems into the top one to three inches of the seedbed during the first three to four weeks following germination. Also, planting later than desired, adds to vulnerability to erosion and weed competition. There are several guidelines a producer should take into consideration to obtain a good stand. Those include land preparation, seed source, fertility, and weed control.

Preparing the Land

The most important aims of land preparation are providing a moist environment for germination, and minimizing competition for the developing seedling. For effective germination, it is best to have moist soil pressed closely against the seed, which is best achieved with a fine, firm seedbed. Sometimes cultivation is not possible due to the nature of the terrain, nor advisable, due to exposure to erosion hazard. In such cases, it is still important to eliminate competition from established plants, which is best achieved using a herbicide such as glyphosate.

Most spring seeding in the area is usually done in land that has been cleared from timber production or by overseeding existing pastures. In the transition from timber to pastureland, trees, stumps and brush left in the field could be removed by burning them late the fall or early spring when optimum weather conditions exist and following the burning protocols and guidelines established by the **Mississippi Forestry Commission**. If the land is to be used only for grazing, some stumps and roots could be left in place, but this will make fertilization and herbicide applications more difficult. If the land is being used of hay or silage production, then all stumps and roots should be removed to avoid tearing up forage harvesting equipment. If overseeding existing pastures, make sure that any residual biomass is removed (usually by burning) before broadcasting or using a no-till drill. The major disadvantage of overseeding is slower and less uniform seedling emergence.

Seed Source: Choosing a Forage Species

Selecting the appropriate forage for hay, pasture, and/or conservation use is an important decision that producers face. Species selection will depend on the goals of the manager and adaptation characteristics of the available forage species. The producer must choose those forages adapted to the soil and climatic conditions at his/her location. Some characteristics that a producer should be aware of when selecting a forage include species longevity, winter hardiness, growth habit, drought tolerance, emergence time, and optimum germination temperature. It is also important to use high quality seed (good germination and purity percentage). Keep in mind that seed is perishable and can deteriorate if it is not stored properly. Germination declines over time and declines faster if seed storage conditions are warm and in high humidity. If you are buying seed ahead of time, try to store carry-over seed in a cool, dry place. If you have carry-over seed from previous year, have a germination test done before planting and adjust planting rates to compensate for any germination percentage losses. It is recommended to use certified seed to ensure germination and good seedling vigor. Remember that pasture establishment will only be as good as the seeds that are planted.

It is also important to be aware of the proper seeding rate and proper planting depth. Seeding rates varies depending on the forage species. Optimum seeding rates do pay for themselves because we see much less annual weed competition. Do not plant seeds on bulk seeding rates (pounds of seed per acre) if germination and purity levels are less than 90%. In this case consider using pure live seeding (PLS) rates. PLS can be calculated by multiplying the percent germination

times the percent purity. The actual seeding rate based on PLS can be calculated by dividing the recommended rate by the PLS. It is important that your drill is calibrated properly at the time of planting.

Depth of seeding cannot be stressed enough. Proper planting depth should be adjusted based on the size of the seed. Placing small seeds too deep can cause poor emergence and stand failure. Most forage seeds will do well planted at about one-quarter inch or less in depth. If you are going to estimate depth, plant shallow rather than deeper. Large-seeded grasses should be planted 1/4 to ¾ inches deep on medium to heavy textured soils. It may be desirable to plant at ¾ to 1 1/4 inch on sandy soils due to rapid drying of the surface. The shallower depths are recommended for small-seeded grasses and legumes. Broadcasting legume seeds may be more successful in early spring providing that surface soil moisture is adequate for 7 to 10 days. If broadcasting, be sure to lightly harrow the seed to increase seed to soil contact and improve establishment.

Lime and Fertilizer

We often shortchange our pastures when it comes to fertilizer. In Mississippi, many forage producers tend to fertilizer with 13-13-13 or 17-17-17 without knowing if these fertilizers are meetings the requirements for adequate pasture growth or not. Sometimes some of the nutrients might be adequate that there is an economic loss due to blanket applications. It is good management practice to take a soil sample at least six months prior to planting to correct soil acidity or nutrient deficiencies. Use the soil results to get a fertilizer mixed that will provide optimum growth of the pasture when it needs to be fertilized in the spring after emergence. For information on how to take a soil sample refer to **Extension Publication IS036** or contact your local County Extension Office.

Fertilization practices can vary according to the forage being planted and the type of soils. For example, planting done during the rainy season on sandy soils could increase leaching of nutrients out of the root zone while plating done in heavy clay soils could increase flooding and nutrient runoff. During establishment, annual grasses should be fertilized prior to or at planting. For perennial grasses, producers should hold fertilization until new shoots have emerged (usually 3 inches) and plants have develop a root system that will optimize nutrient uptake. The type, amount and timing of fertilizer application during establishment are variable and they depend on the forage type being planted and on soil test recommendations.Seeds can usually germinate without fertilization. However, once the small amount of nutrients in the seed is used, the young seedlings depend entirely on soil nutrients for their development.

Grasses usually have a higher tolerance to acidity compared to legumes. Acidity could be corrected with lime application. Limestone applications should be incorporated prior to seeding for best results. Fineness of limestone grade is important because fine particles neutralize acidity faster than coarse particles. Generally, pelletized limestone sources are no more effective weight/weight than fine limestone. It is important to know the Relative Neutralizing Value (RNV) or Calcium Carbonate Equivalent (CCE) of different types of lime being use to adjust application rates. This is an index of how good lime is at neutralizing soil acidity. The RNV/CCE is calculated based on two quality parameters: purity and fineness (particle size). Keep in mind that lime quality is not indicated by how easy it is to transport, store, or spread. **Table 1** provides RNV for different forms of lime.

Table 1. Relative neutralizing value (RNV) of the pure forms of commonly used liming materials.

Lime		RNV (%)[1]
Common Name	**Chemical Name**	
Slag	Calcium silicate ($CaSiO_3$)	86
Limestone	Calcium carbonate ($CaCO_3$)	100
Dolomite	Calcium magnesium carbonate [$CaMg(CO_3$)	109
Slaked	Calcium hydroxide [$Ca(OH)_2$]	135
Burned	Calcium oxide (CaO)	179

[1]RNV represents the neutralizing value of the material compared to pure calcium carbonate. For example, dolomite lime neutralizes 9% more acid than the same weight of calcium carbonate.

Nitrogen generally is not needed for successful forage stand establishment. It is recommended to apply nitrogen when plants have reached 2 to 3 inches in height and have developed a root system that will increase nitrogen use efficiency and reduce leaching or runoff. Nitrogen applications should be between 20-30 lb N/ac. Moderate to high levels of applied nitrogen at seeding promotes weed growth, which may provide too much competition for the new forage seedling. Legumes properly inoculated before planting normally do not require nitrogen fertilization.

Phosphorus encourages root development. A well-developed root system helps protect seedlings from dry conditions

and produce vigorous stands throughout the summer. Phosphorus is generally optimum in Mississippi soils. Legumes require higher levels of phosphorus than grasses. Work phosphorus in to the soils before seeding a new pasture, or broadcast it over the top of established pastures.

Potassium is absorbed by plants in larger amounts that any other nutrient with the exception of nitrogen. Potassium in an essential nutrient for increasing plant drought tolerance, winter hardiness, and disease resistance. The need for potassium varies widely through Mississippi. Potassium depletion is usually a problem in hay production systems. Potassium in the soil remains relatively constant where forages are grazed and manure redeposited on the field. When soils become built up in K, it is possible that forage K levels can go well above what is necessary. This is called **luxury consumption**. Both grasses and legumes may contain as much as 4 to 5% K on soils rich in K. For most cattle, forage K levels above 3% are not necessary, but also are not harmful. However, dry cows can be very sensitive to high K levels during the last three to four weeks before calving, resulting in higher frequencies of milk fever and retained placentas. In addition, high levels of K can inhibit availability of calcium (Ca) and magnesium (Mg) to livestock.

Weed Control

Weeds can be a problem. Weeds compete with the established species and reduce productivity of the pasture. They can result from inadequate land preparation or poor chemical application. If seed is planted into a weedy seedbed, the ready-established weeds suppress the developing forage seedlings. Non-selective herbicides such as glyphosate or paraquat could be used several weeks prior to seeding when planting in a no-till environment. If there are perennial and biennial weeds established in the soil where the new forage seeding is planned, they should be controlled before planting. A pre-emergence herbicide could be applied if one is available and safe to use on the newly seeded forage species. Consider using a herbicide or herbicide mix to control weeds. Getting into all the herbicide options, rates, and planting restrictions is beyond the scope of this article. For more information on this topic consult the **Mississippi Weed Control Guidelines** for Forage Production.

Summary

The actual success in getting that new seeding established depends upon several factors including: soil fertility, species selection, weed control, timing of planting, planting depth, and post planting management. Finally, after the forage stand is planted, manage it to give it the best chance for success. Allow an eight to ten week period after germination before a light grazing or light hay cutting is made. After the first light grazing or cutting, manage normally. Remember that if forage is being removed as a hay crop, nutrients should be replaced to maintain soil fertility.

The main consequence of plating at the wrong time or in nutrient depleted soils is thin stands which allow for encroachment of undesirable species. This is costly in terms of money and lost production. Unfortunately, many producers are tempted to live with marginal stands and because of the perennial nature of the plants this can influence stocking rate, carrying capacity, and animal performance for many years to come. Stand density will significantly influence yields, nutrient removal, erosion and water quality.