



Tips for Establishing and Managing a Winter Pasture

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Profitable winter grazing systems depend upon matching the forage growth and quality with the livestock nutritional requirements. The importance of forage management and forage diversity has increased considerably in the last couple of years due to increase in fertilizer prices and drastic changes in environmental conditions. Deficits of forage quantity and quality during critical periods of animal performance results in loss of animal production (weigh gain, milk production, breeding cycles, etc.). Therefore, ensuring a good forage establishment is very critical. This article will highlight some tips that any “grass farmer” should keep in mind. Yes, “a grass farmer”, with the game changing in the Ag sector there is no room to be a livestock producer without becoming a forage producer first.

Maintaining Soil Fertility – Soil fertility is vital because mineral imbalances affects forage quality and animal health. The only way determining soil nutrient status and providing corrective measurements for the forage being currently grown or for future species is by soil testing. Many of you will ask why soil pH is important. This is important because the availability of nutrients in soil solution could be determined by pH. Also, the base saturation levels of calcium, magnesium, potassium, sodium, and hydrogen determine the soil pH. Calcium is a one nutrient that drives forage production because its involvement in many chemical reactions in the plant. It is possible to have a high pH and still have a low level of calcium. The three most common nutrients in forage production are phosphorus, potassium, and nitrogen.

1. **Phosphorus** is very stable, not very mobile in the soil, and available to the plant when needed. It can basically be applied at any time during the growing season. This will also allow producers to be flexible and buy phosphorus during the “off-peak” season. One disadvantage with this approach is that phosphorus is very important in root development, especially during germination and some should be applied at planting. Keep in mind that high phosphorus applications from poultry litter can also pose an environmental risk. It always a good idea do develop a nutrient management plan.
2. **Potassium** is a very stable nutrient source and does not pose the environmental risks encountered with nitrogen or phosphorus applications. Potash has become more expensive that nitrogen and using split applications could be more efficient. The reason for split applications is to avoid the risk of a phenomenon called “luxury consumption.” This means that the plant takes more potassium of what could be used in the plant metabolic functions. This high potassium concentrations decreases magnesium uptake and causes grass tetany. Potassium application should be split in two or more applications. A 50:50 or a 40:60 application is usually recommended.
3. All winter annual grasses need **nitrogen** to fuel their growth cycle to maintain production and forage quality (especially protein). It is consumed daily even with legumes are present. Remember that legumes will not provide nitrogen to grasses until they die in the summer. During the winter, they provide better forage quality. In a grass/clover mixture, small nitrogen application (25-30 lb/ac) are recommended in the fall, but not in the spring. Remember that nitrogen fertilizer recommendations are given as total seasonal application. Nitrogen is very mobile, split your nitrogen applications to avoid risky losses due to leaching, volatilization, late frost, or drought. Split nitrogen applications also reduce the risk of nitrate poisoning.

Seeding Method – Improper seeding is one of the most common errors and failures in establishing forage stands. If there is a desire to establish winter annual pastures, there are several key principles that are necessary for a successful stand. There are three major methods of establishing forages from seed: conventional tillage, no-till, and broadcast.

1. **Conventional tillage** could be used if a poor pasture needs to be renovated or a bare soil surface need to be prepared for seeding. Utilization of this method in warm-season pastures could affect the stand. A minimum tillage is recommended to overseed pastures with winter annuals. Make sure that there is a good soil-seed contact to insure proper seed germination. If the seedbed is too cloddy, seed will not be able to get



enough moisture for germination and a spotty stand will be the result of it. Keep in mind that prepared seedbeds establish quicker, require lower seeding rates, but can also more prone to weed competition and pugging (compacted mud due to hoof action) when grazing in wet conditions. If planting small seeds such as clover seeds, it might be ideal to use a cultipacker.

- No-till** planning usually maintains some vegetative cover on the soil surface and reduces erosion potential during the establishment period. It also provides a firm bed for livestock in the winter and reduces potential compaction from hoof action. This seeding method is commonly used when establishing winter annuals into bahia or bermudagrass pastures. This method requires that an existing sod is grazed to less than three inches, clipped short, or a burndown herbicide is to be used. Clovers respond well to no-till. To reduce competition for plants already present, a burndown herbicide such as glyphosate or paraquat can be used at least a week before planting. Depending on environmental conditions, glyphosate will take 10-15 days to control the existing vegetation while the effect of paraquat can be observed within 24-48 hours of application. It is important to keep in mind that high rates of glyphosate will kill the existing vegetation while a single paraquat application will typically suppress the vegetation and allowing regrowth over time.
- Broadcast** is a method that places the seed on top of the ground of an existing pasture. This method does not ensure uniform ground cover or a good seeding depth. Make sure that pasture are clipped or grazed very short to avoid the seed stays on top of the organic matter or vegetation. This seeding method might require light disking, harrowing, cultipacking, or rolling to ensure a better soil to seed contact. Because of the uneven seed distribution, this seeding method will require much higher seeding rates to ensure that at least a 50% or higher seed establishment is achieved.

When to plant – Seed establishment could be considered a non-traditional form of gambling because Mother Nature dictates environmental conditions year round. The risk and potential for disaster is always present. Although traditional planting of annual winter forages across Mississippi is done from mid-September to late October moisture and temperature play a major role. Also, late planting might increase winter kill because plants do not have enough time to develop a strong root system. By late planting, seed may be slow and sporadic to germinate or perhaps even not germinate. Winter annual grasses grow better when soil temperatures are between 50 and 65 °F. These temperatures usually occur when daytime air temperatures are between 60 and 75 °F. Planting too early when there is still high summer-like temperature and humidity can cause plants to go dormant (stop growing) or the possibility for diseases such as blast in annual ryegrass. Dormancy in cool-season plants can occur when temperatures are above 85 °F or below 40 °F.

Seeding Rates – Seeding rates are extremely important in establishing a good forage stand. They can vary depending on the seeding method being used. As weather conditions and germination are not always optimal, increasing the recommended seeding by 10% is usually a good practice when doing a no-till planting and 20% when broadcasting the seed in a pure stand. Choosing the proper forage species for a pure stand or a mixture depends on how it adapts to various soil characteristics. Another key point is making sure that seeder or planter is properly calibrated for the proper seeding depth and rate. Another factor to consider is planting good quality certified seed. Avoid seed lots has large quantity for inert material or no-viable seed. To avoid this, buying seed on pure live seed (PLS) basis is an important practice. The PLS of the seed can be calculated using the purity and seed germination percentages found in the seed tag ($\% \text{ PLS} = \% \text{ purity} \times \% \text{ germination}$). The PLS information can be used to adjust the recommended bulk seeding rate ($\text{Seeding Rate} = \text{Bulk Seeding Rate} \div \% \text{ PLS}$).

Selecting a Winter Forage – Winter grasses and legumes productivity and performance varies due to environmental conditions. There is not a one forage variety or species that fits all the environments. Forage selection should be based on different factors such drought tolerance, cold hardiness, soil drainage, pH, grazing persistence, fertilizer nutrient requirements, growth habit, longevity, and palatability. There is a good selection of winter forages that can fit in different environmental conditions such annual ryegrass, small grains (oats, wheat, rye, and triticale), and different annual (arrowleaf, ball, berseem, crimson, and vetch) and perennial clovers (white and red).

- Annual ryegrass** is adapted to a wide range of soil types, growing better on wet soils than most other cool-season annual grasses. Ryegrass is very responsive to nitrogen and the peak season of forage production for ryegrass is later than that of oats or rye. Ryegrass is planted on a prepared seed bed or is overseeded into dormant permanent pasture. It is usually planted at a rate of 25-35 lb/ac when seeded in a pure stand or 15-20 lb/ac when seeded in mixtures with other cool-season forages such as small grains on legumes. Annual ryegrass is considered to be one of the highest quality winter forages with dry matter digestibility is generally greater than 65% and high crude protein content.
- Small grain crops produce high-quality forage during the fall, winter and spring. Oat is the least winter-hardy cool-season annual grass. **Oats** do not grow well on sandy soils, but tolerate wet, poorly drained soils better than other small grains. During the first months of growth, oats are high in protein (14% to 18% protein) and



easily digestible. **Rye** is the most winter hardy of the annual winter pasture grasses and produces more fall and winter forage. Rye matures earlier in the spring than most wheat varieties and grows well on well-drained soils with sandy texture. **Wheat** is flexible crop that can be used as a forage crop and grain crop simultaneously, if managed properly. Wheat is the most tolerant of heavy wet soils. It is more cold tolerant than oats, but less tolerant of cold and acidic soils than rye. During its first months of growth, wheat is high in protein (14-20% protein) and highly palatable. **Triticale** is a cross between wheat and rye and its forage production generally exceeds that of wheat. Triticale is very winter hardy and comes on aggressively in the early spring.

3. Incorporating **clovers** into winter pastures could help a beef cattle operation keeping dollars in the pocket. They can help with reducing spring fertilization cost. Clovers can provide over 100 lb N/ac depending on the species. One important aspect of establishing clovers is to make sure that they are properly inoculated with the correct commercial inoculant. Keep in mind that seed stored for a long time will need to be re-inoculated. The bacteria frequently die when exposed to dry, hot conditions even for a short time. Under good conditions the number of live bacteria within the bag of inoculant will remain high for 2 or 3 months, but then start to decrease. This death rate is greatly affected by temperature. Check the expiration date on the inoculant bag. Keep it refrigerated or in a cool, dry place until use. Another important factor is that most clover seed are usually coated. The coat can account for up to 40% of the seed weight. It is important to adjust the seeding rates accordingly to achieve the desired seeding rate.

Summary – Winter annuals are an important part of the grazing system, they are easy to establish and very productive. There is no escape that in some years weather will be favorable for establishing winter annuals than others. Proper fertility is required to ensure stand establishment and expected forage production. Fertilize based on soil test results. Plan ahead and plant during the recommend time frame when rainfall is adequate and when soil temperatures are appropriate. Start grazing when forage has reached optimum growth. Developing a successful winter rotational grazing system will allow extending the grazing season and minimizing hay utilization.

Upcoming Event:

Warm-season Forage Tour

August 13, Starkville, MS, 8:00 am to 11:00 am.

For more information visit <http://mississippiforages.com>

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