Forage News

MISSISSIPPI STATE UNIVERSITY EXTENSION SERVICE

Grazing Cool-season Annual Forages

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Hay is often the greatest expense for Mississippi livestock operations. Utilizing annual cool-season forages is a practical way to maintain or increase livestock profitability. Grazing through the winter can significantly reduce the cost of livestock production. Producers who graze livestock during the winter need to know techniques that optimize their resources, provide consistent, high-quality forage, and conserve soil. Grazing livestock are very selective. When animals are provided an entire field of lush annual ryegrass they eat the best first and trample and waste much of it, contributing to a very low-quality diet during the later days or weeks of the grazing period. To improve the efficiency of fall and winter forage, use temporary fencing to divide fields into smaller units or narrow strips. This strategy stretches the forage supply over a longer period and provides more uniform forage quality.

In Mississippi, cool-season annual forages can be expensive to plant, but they can be a less costly substitute for supplementation due to the high quality of the forage and the amount of production. Utilization of cool-season forages has several pros and cons. Oats are the least winter hardy of the cool-season forages and its biomass productions can be variable. Oats do not grow well on sandy soils, but tolerate wet, poorly drained soils compared to the rest of the small grains. Rye is a winter hardy forage crop that produces most of its forage in late fall and early winter. Because rye is early maturing, sowing with a ryegrass is recommended. Rye prefers well-drained soils. Wheat is commonly used in Mississippi's grazing system, but one of the disadvantages is the low forage production in January and February. It has a wide range of soil adaptation. Annual ryegrass is adapted to all soils in Mississippi and grows well in wet soils. Utilizing ryegrass as the backbone of the winter grazing season will optimize the winter grazing system.

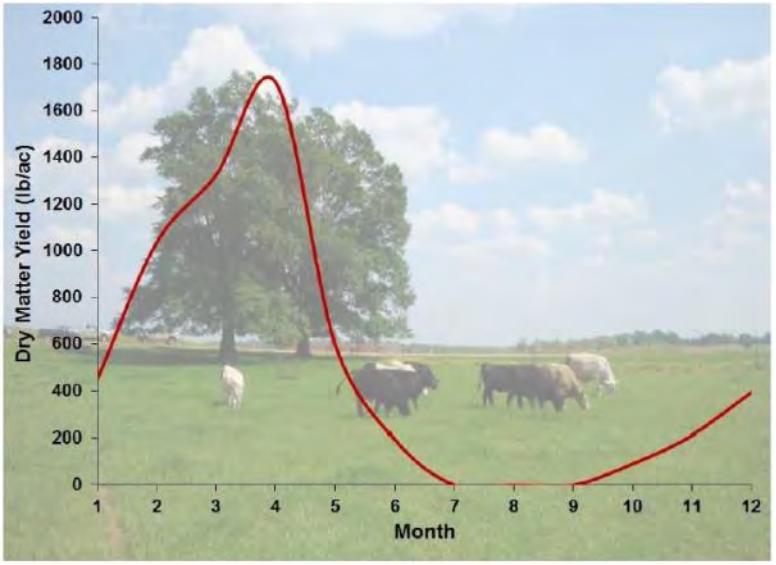

Figure 1. Seasonal distribution of annual ryegrass biomass production in Mississippi. Lemus et al., 2013.

Management and utilization of cool-season annual forages such as small grains, ryegrass, and clovers for optimum economic returns involve the integration of basic forage-animal production knowledge with the ability to manage various events in a timely manner. Knowing the quantity of forage in a pasture is important for managing livestock and ensuring that sufficient quantities of feed are available throughout the year. Producers are required to make estimations on forage DM growth and production as well as forage removal by grazing in order to establish an initial stocking rate for the winter grazing season. Because of the variability in the growth curve of annual ryegrass, those estimates in forage production should be evaluated on a monthly basis to project the necessary stoking rate to improve forage utilization and animal performance. This does not mean that producers have to buy or sell cattle to adjust the stocking rates, but they need to be flexible in the stocking rate throughout the growing season. Utilizing this approach involves manipulating the stocking rate to match current forage production conditions during the winter. This practice will preserve forage growth into the spring, thus prolonging the grazing season.

It is also important that forage production is accelerated by proper timing and fertilization rate. Nitrogen application in annual ryegrass should start when forage production has reached 3 to 5 inches. Re-apply N fertilizer (50-60 lbs N/ac) in early January and once again in Mid-March to early April. If baleage production is to be implemented, an April N appli-

cation might be needed to obtain optimum yields. Remember that fertilizer applications should be based on soil tests and stocking rate objectives and/or requirements for DM production. Fertilization of cool-season annual forages and moderate stocking rates enhances nutrient cycling. If winter annuals are established into a perennial sod, then fertilization creates a year-round management program where bahia or bermudagrass root systems continue to use and re-use nutrients deposited by manure. Keep in mind that for this program to be effective, a uniform rotational grazing system will be needed. This will allow nutrients to be cycled evenly across the field.

A four-year study conducted at the University of Florida evaluated the mineral composition of cool-season forages in a monoculture or mixed forage system that were established in a tilled seed bed or over-seeding into dormant warm-season pastures. Macro-nutrients measured included calcium (Ca), phosphorus (P), sodium (Na), potassium (K) and magnesium (Mg). Trace minerals measured were copper (Cu), iron (Fe), zinc (Zn), manganese (Mn), cobalt (Co), and selenium (Se). Some year-to-year variation was noted for all minerals except for sodium. Magnesium varied the most; almost two-fold from year-to-year. There was a large month-to-month variation in concentrations of K, P, Fe, and Mn; little variation for Ca, Mg, Cu, and Co; and no variation for Na and Se. Phosphorus and K concentrations declined towards the end of the growing season. Magnesium was lowest in the spring while Fe decreased and Mn increased as the grazing season progressed. The forage system nor the establishment method has significant effect in mineral composition. This indicates that soil testing recommendations should be followed to adjust nutrient deficiencies.

In a winter grazing system, stocking rate becomes one of the most important factors controlling forage growth (rest and recovery), animal performance, and economic returns. Initial stocking rates of annual ryegrass for the growing season should be between 650 and 800 lbs body weight (BW) per acre to avoid the increased risk or likelihood for the need to provide supplemental hay during mid-winter. This will reduce the risk of de-stocking the pastures due environmental conditions. However, as we approach late February and early March forage production increases and stocking rates can be increased to 1000 to 1250 lbs BW per acre. Utilization of these stocking rates could optimize forage production for a 75 to 90-day period. If an intensive rotation (3-5 day grazing) is utilized from February to May, stocking rates can be increased to 1300 to 1600 lb BW per acre. It is important to remember that establishing winter pastures is costly ($150 to $250/ac depending on fertilization) and optimizing utilization as part of the overall grazing plan is very important. Always choose stocking rates that allow enough rest between rotations, increase grazing efficiency, and promote forage accumulation.

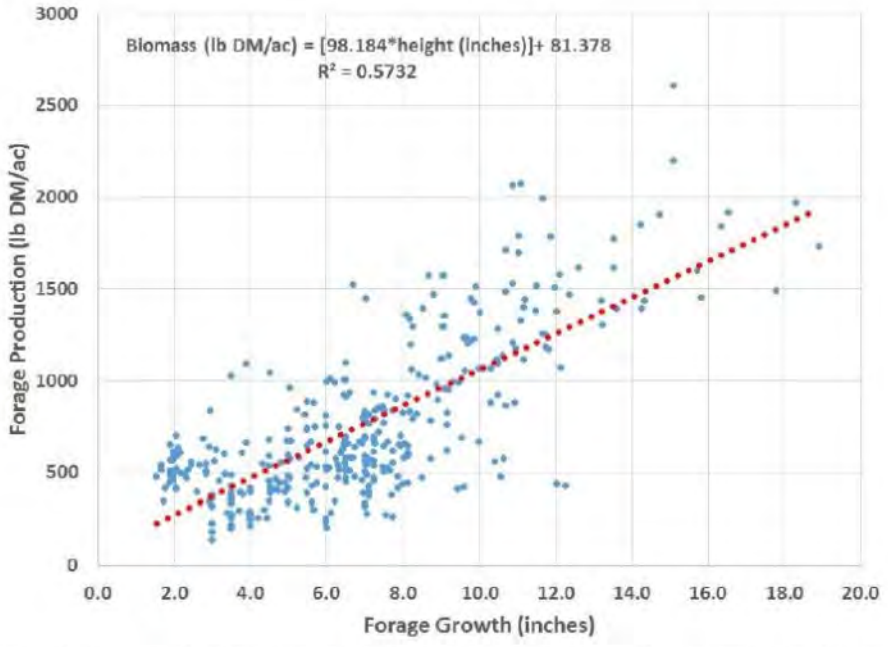

Figure 2. The relationship between the compressed height of annual ryegrass across forage growth and its dry matter forage production. Data pooled from various studies related to fertility and management practices at Mississippi State University. Lemus et al., 2013.

Another approach to grazing management is utilizing limit-grazing early in the winter season. Pastures can sustain higher stocking rates (1600 to 2000 lb BW/ac) using this technique. Normally, these limit-graze systems would entail a 2 to 3 -hr grazing period per day with a 20 to 22-hour deferment, or some alternate-day grazing plan. This management strategy involves providing supplemental hay, stockpiled forage and protein source in addition to an adjacent "sacrificed" area for animals to reside (with a water source). This approach will maintain pastures in a vegetative state until late February to early March when rapid forage growth occurs. The limit-grazing approach is based more on compensatory animal daily gains (ADG) in the spring. Keep in mind that using this system can increase the cost of hay and supplementation if trampling of forage is allowed.

Impact on Soil - Winter grazing when soil conditions are muddy can lead to soil compaction and long-term damage to pasture sod, especially when over-seeding onto existing summer perennial pastures such as bermudagrass and bahiagrass. Damaging the surface soil structure can lead to the formation of cracks as the soil dries, which, in turn, allows water from subsequent rainfall events to bypass the biologically active zone where nutrient cycling, root activity, and other processes take place. Recovery after severe damage can take several years, reducing subsequent forage or crop

production. It also can reduce aeration, thus increasing the potential for nitrogen denitrification. Compacted areas in pastures often have decreased infiltration, and increased surface runoff and erosion. It is important to have an area identified and fenced as a "sacrifice" grazing area for use when conditions are muddy. The sacrifice area should be on a relatively level site that is suitable for reseeding, and can be accessible for supplemental feeding if necessary.

To be successful in a winter grazing management program, producers must choose the desired level of performance for the cattle. An integral part of the stocking rate decision for small grain-ryegrass pastures is the method of stocking used. The question is, do you want more gain per animal or more gain per acre? In both cases, the answer is YES! If the target is to have ADG from 2.5 to 3.5 lb/day/head, the livestock will require an abundance of high quality forage dry matter to selectively graze and stocking rates might be lower. If ADG is 1.5 to 2.5 lb/day/head, then stocking rates can be increased to reduce refusal of lower quality forage. Keep in mind that a winter grazing method that uses 2 to 3-day grazing periods usually enhances forage dry matter production compared to a system that is similarly stocked and continuously grazed.

Upcoming Forage Events:

American Forage & Grassland Conference, January 12-14, Memphis, TN
http://afgc.org/events.php

Cool-season Forage Tour, April 10, Starkville, MS

Southern Pasture and Forage Crop Improvement Conference, April 21-23, Biloxi, MS

Marshall County Forage Tour, April 24, Holly Springs, MS

Warn-season Forage Tour, July 11, Starkville, MS

More detail information on forage related events visit:

http://forages.pss.msstate.edu/events.html

http://mississippifgc.org/events.html