Forage News

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Center for Forage Management and Environmental Stewardship

Renovating Warm-Season Perennial Pastures

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High-yielding, high-quality warm-season perennial pasture can provide the foundation for profitable grazing programs. Perennial warm-season grasses such as bermudagrass and bahiagrass have multi-purpose use (grazing and hay) in Mississippi and they provide viable economic opportunities to the cattle industry. There are approximately 903,000 acres in bahiagrass and 770,000 acres in bermdugrass across the state. Many pastures in Mississippi have low productivity, primarily due to the lack of adequate fertilization, poor grazing management, and increased weed competition.

Pasture renovation is the improvement of pasture by changing management strategies. Renovating a pasture or hay field can involve minimum or extensive management practices that help restore the vigor of a forage species (Fig. 1). Renovation can be as simple as soil testing and applying the recommended fertilizer or as complex as destroying the existing pasture and introducing improved forage species. The intensity and level of renovating a pasture depends on the reason for a decrease in vigor and what the future management goals of the producer might be (Fig. 2). A renovation should be considered when the following conditions are observed in a pasture such as: (1) reduced biomass production due to changes in botanical composition, (2) thin stands with bare ground, (3) increase encroachment of grass and broadleaf weeds, and (4) increase in water runoff or poor drainage.

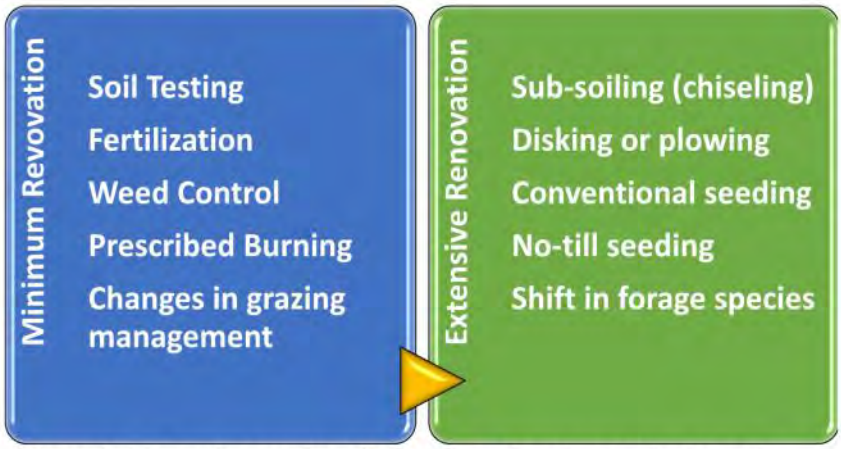

Figure 1. Renovation practices that can impact pasture production and utilization.

The renovation of pasture or hay fields must be carefully planned in advance to target planting dates to ensure successful renovation. The reason is because the intended changes should be designed to improve forage production and increase pasture persistence, quality, and carrying capacity of a selected species in the field. Keeping these goals in mind a producer should ask him/herself the following questions: (1) What is the current soil fertility? (2) Does the target pasture need a total or partial renovation? (3) Which grass or legume should be planted? (4) Which pasture renovation strategy should be considered? and (5) When is the best time to implement a pasture renovation?

Attention to details must be considered when establishing warm-season pastures. Producers should consider the following points: soil testing and fertility, seed quality, seeding rates, seedbed preparation, planting methods, evaluation and management of newly-seeded pastures, and weed control. Each field has different soil types and variances, therefore, each pasture should independently have a soil test to determine pH and nutrient deficiencies. Deficiencies of phosphorous and potassium can be corrected during seedbed preparation or during planting. Nitrogen should not be applied during establishment of perennial warm-season grasses since nitrogen will promote competition of weeds. Nitrogen should applied after the desirable species has emerged at least 2-3 inches tall.

Seed Quality – The quality of warm-season grasses such as bermudagrass and bahiagrass is extremely important and it could be quite variable. Using certified seed that provide the percent germination and purity will allow to adjust seeding rates to achieve the recommended planting rate. Seed should be planted in “pure live seed” (PLS) basis. PLS is the percent obtained from multiplying the seed germination x purity divided by 10,000. For example, let assume that you

buy a bermudagrass seed with 75% germination and 95% purity and the recommended rate is 10 lbs PLS per acre. The PLS of the seed is 0.71 ((75x95)/10000 = 0.71). To achieve that 10 lbs PLS per acre you will need 14 lbs of bulk (10 lbs/0.71 = 14 lbs) bermudagrass seed. Seeding rates are also dependent on the method of planting, the type of seed planted, as well as the intended use of the grass (pasture or hay). Most perennial warm-season grasses (seeded bermudagrass, hybrid bermudagrass and bahiagrass) are seeded from mid-April to mid-June. In southern Mississippi plant can begin as early as April 1.

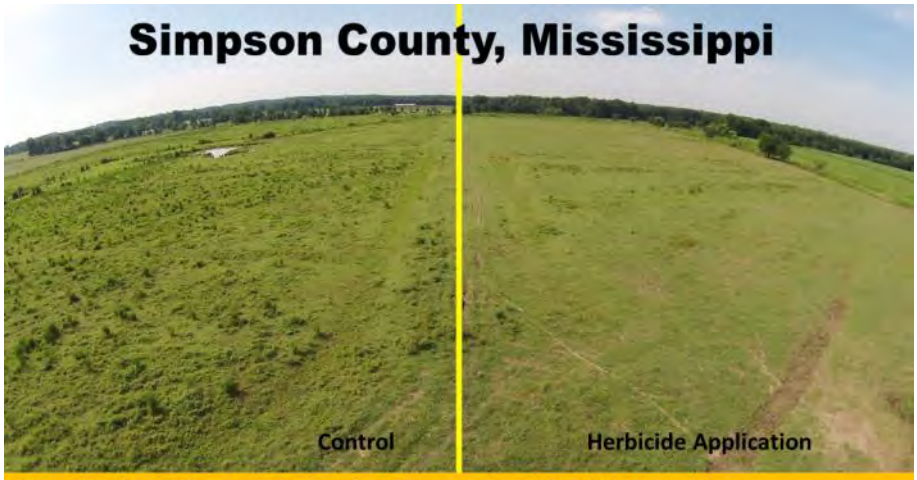

Figure 2. Herbicide application of aminopyralid plus 2,4-D to renovate a bermudagrasss pasture that was loosing 60% of the grazing potential due to the invasion of horsenettle and dogfennel.

Seedbed – Seedbed preparation when planting seed or sprigs (bermudagrass) becomes an essential component of the establishment process. Because of their small seeds and limited tolerance of weed pressure as seedlings, establishing a new stand of warm-season grass requires a clean, firm seedbed and a smooth soil surface for shallow planting. In order to have a firm bed, seed preparation includes plow, disk, harrow and cultipack. A firm bed means that the footprint should be as deep as the sole of the shoe. When planting in a clean seedbed, drilling the seed will be the preferred method, but seed can be broadcast and then running a cultipacker to allow covering the seed. Usually broadcasting might require higher seeding rates.

Pasture renovation by inter-seeding into the existing pasture can be efficient provided that the competition from the existing forage could be reduced to enhance establishment. Using a no-till system early in the spring before the green-up of the bermudagrass or bahiagrass is a logical approach. In this case, delaying nitrogen application until germination is observed may help to avoid competition. Another option will be sod suppression by applying a chemical burndown and delaying growth in the established sod for greater germination.

Planting shallow is also important part. The recommendation is to plant seed no more than one-half inch deep. Planting time is very important. Warm-season grasses should be planted from Mid-April to early June. Warm-season grasses require a minimum soil temperature of 55 to 60 ºF for germination. With adequate soil moisture and temperature new seedling should emerge within 10-20 days.

Species Selection – Careful attention should be paid to proper plant material selection. Understanding the intended use of warm-season grasses (hay or pasture) can allow for species that are better suited to meet the long-term goals of your farm operation. Bermudagras is high-yielding species that grows best on well-drained soils (Fig. 3). Improved seeded bermudagrasses are becoming popular, especially when sprigging of a hybrid bermudagrass is not feasible. However, it is important to keep in mind that some of these new varieties can be relatively expensive and may not have better performance that common bermudagrass under the same management approach (Bulletin 483, http://mafes.msstate.edu/publications/information-bulletins/ib0483.pdf). Seeded berumudagrass should be planted at a rate of 10 to 12 pounds per acre. Common bermudagras can produce viable seed or spread through rhizomes (underground roots) or stolons (above ground roots). It is also important to understand that seeded varieties might have a 20 to 30% lower yield production than hybrid bermudagrass varieties. On the other hand, hybrid bermudagrass can be established through rhizomes or tops (mature growth). Hybrid bermudagrass should be planted in a well-prepared seedbed at a rate of 30 to 50 bushels per acre at one to two inches depth. Broadcasting the sprigs and then lightly disking them into the prepared seedbed can an option, but will require a higher seeding rate of 50 to 75 bushels per acre.

Bahiagrass is a deep-rooted species that is adapted to a wide range of soils across Mississippi. It is one of the predominant species in the southern part of the state. Once is it seeded and established, it can spread through stolons. It is more adapted to poorly-drained soils and more than shade tolerant than bermudugrass. Bahiahgrass can be drill or broadcast at 20 to 25 pounds per acre and seed to a ¼ to ½-inch deep. Although the forage quality of bahiagrass can be lower than hybrid bermudagrass, close grazing might help to improve forage utilization. Yields can be increased with proper fertilization (Fig. 3, Bulletin 510, http://mafes.msstate.edu/publications/information-bulletins/ib0510.pdf).

Weed Control – Weeds can be a major problem in new plantings of seeded bermudagrass and bahiagrass. Since bermudagrass (especially when using springs) and bahiagrass might slower to establish at first, competition from other grasses and broadleaf weeds can delay establishment. Suppression of weeds ahead of time is critical. No pre-

emergence herbicides are labeled for seeded bermudagrass or bahiagrass establishment. Broadleaf weeds can be controlled with 2,4-D after these grasses are four to six inches tall. In the case of hybrid bermnudagrass, using a pre-emerge herbicide is recommended. In seeded stand, use of herbicides might be limited and mowing to a height that will not impact the growth of the new grass seedlings is recommended. Don't mow lower than four to six inches or new seedlings could be damaged. Getting into a rush and planting into a weed-infested seedbed is almost a guarantee of stand failure. Some producers have indicated that they cannot control the weed because herbicides will kill the existing legume (e.g. white clover). However, before spending more money to renovate a whole pasture, it might be more economical to control as many weeds as possible. Even if this means applying an herbicide that might kill or suppress the clover, just simply add more clovers to the mixture the following fall. For herbicides that can be used in warm-season grasses check forage section in the 2016 Mississippi Weed Control Guidelines (Publication 1532, http://msucares.com/pubs/publications/p1532.pdf).

Figure 3. Yield comparison for warm-season forage species collected at Mississippi State University. Bahiagrass is a 3-year average at Poplarville, MS (White et al., 2015), bermudagrass (hybrid) is a 12-year average at Starkville, MS (Lang, 2013) and bermudagrass (seeded) is a 3-year average at Starkville, MS (White et al., 2014).

Take Home Message – Pasture is the basis of any livestock operation that indicates to be truly sustainable. This is especially important as the livestock sector continues to experience extraordinarily high fuel and other input costs. Pasture renovation is a series of actions that lead to a permanent or long-term change in the botanical composition of a pasture. While, warm-season grass seedlings may offer few forage production opportunities during the year of establishment, do not panic or be over anxious. Critical to the success establishing or renovating a pasture is proper planning prior to the actual seeding, so that weeds have been controlled and soil pH and fertility are at optimum levels at the time of seeding. Proper planning helps to ensure that your investments in time, labor and seed will pay off.

Upcoming Events

April 22, 2016—Pearl River Co. Forage Field Day, Poplarville, MS
April 28, 2016—Pike County Field Day, Summit, MS
May 12, 2016—Hinds Co. Forage Field Day, Utica, MS
May 19, 2016—Alfalfa Field Day, Newton, MS
June 3, 2016—Lawrence Co. Alfalfa Field Day, New Hebron, MS
June 17, 2016—Clay Co. Forage Field Day, West Point, MS
June 28, 2016—Warm-season Forage Field Day, Starkville, MS

For detailed information relater to upcoming forage events please visit:
http://forages.pss.msstate.edu/events.html

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