Louisiana Forage Farmer

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Articles

2024 Pasture and Warm-Season Forage Crop Variety Suggestions

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Introduction

Variety selection is an important decision that producers must make when establishing forages in pastures. Many varieties of forage crops are marketed in Louisiana and scientists with the Louisiana State University Agricultural Center periodically conduct variety trials with warm-season forages. This information is used to make suggestions each year concerning warm-season forages for producers to consider utilizing. Suggested varieties listed are ones evaluated in Louisiana and found to perform satisfactorily. Suggested seeding rates are made assuming the use of good quality seed that meets the germination and purity seed standards as determined by the Louisiana Department of Agriculture and Forestry Seed Commission.

Perennial Grasses

Warm-season perennial grasses grown in the Southern region are of tropical origin and grow mainly during the late spring, summer and early autumn. These grasses become dormant and remain unproductive during the winter months. The optimum planting date for these grasses is from March 1 to June 1, but they can also be planted anytime during the growing season when soil moisture is adequate.

Bermudagrass

Bermudagrass can be grown throughout Louisiana, and is adapted to most soil types. Both seed-propagated and vegetatively propagated varieties are available. Seeded varieties should be planted at a rate of 5 to 8 pounds of hulled seed per acre. The hybrid varieties should be planted with enough plant material to give about 7,500 plants per acre.

Hybrids: Alicia, Brazos, Coastal, Grazer, Tifton 44, Tifton 85, Russell, Jiggs, Sumrall 007 and Little Phillip #1

Seeded: Common, Cheyenne II, Mohawk, Ranchero Frio, Sungrazer Plus

Bahiagrass

Bahiagrass is widely grown throughout Louisiana, and is particularly adapted to well-drained sites and will persist on low fertility soils. It should be seeded at a rate of 15 pounds per acre.

Argentine, Pensacola, Tifton 9, UF Riata, TifQuik and AU Sand Mountain

Dallisgrass

Dallisgrass is very productive on alluvial soils and more fertile upland soils in Louisiana. Dallisgrass is noted for having poor seed quality. Seed germinates slowly, often taking four weeks or longer for emergence. There are no varieties of dallisgrass; all seed is “common” and is imported from countries outside of the United States and seed availability is often limited. Dallisgrass should be seeded at a rate of 5 pounds per acre.

Annual Grasses

These grasses should be planted between April 15 and August 1. They will be killed by frost in the autumn. Specific variety suggestions for these species cannot be made because of insufficient data.

Pearl Millet

This species generally does best on well-drained, light, and upland soils. Pearl millet should be seeded at a rate of 25 pounds per acre if drilled and 30 pounds per acre if broadcast. This species does not cause prussic acid poisoning in livestock, but nitrate accumulation can cause toxicity under some circumstances.

Sorghum Sudangrass

This species generally does best on heavier soil types, although it can also be successfully planted on well-drained soils. Sorghum sudangrass should be seeded at a rate of 30 pounds per acre if drilled and 35 pounds per acre if broadcast. Nitrate accumulation or prussic acid can cause toxicity under some circumstances.

Warm Season Legumes

Alyceclover

This species is best adapted to well-drained soil types. Seed are planted at a rate of 15 to 20 pounds per acre in May or June. Establishment is slow and weed competition may be a problem. There are no varieties of alyceclover available; only “common” seed is marketed.

Perennial Peanut

This is a perennial legume that is adapted to well-drained soil types. It should not be planted on heavy soils that are prone to flooding or being water-logged for extended periods of time. Perennial peanuts would be better adapted in southern parts of Louisiana, but have been shown to survive for several years at locations just south of I-20 in north Louisiana.

Two varieties that have been used in research trials in Louisiana are Arbrook and Florigraze. They should be planted at a rate of 60 to 80 bushels of rhizomes per acre from January 1 to March 15. Planting material is scarce, and producers may have to obtain their material from Georgia or Florida.

Warm Season Silage and Green Chop Crops

Specific variety suggestions for these species cannot be made because of insufficient data.

Forage Sorghum

This species should be planted from April 15 to June 15 in south Louisiana and from May 1 to June 15 in north Louisiana. It can be planted at a rate of 8-12 pounds per acre if drilled and 15-20 pounds per acre if broadcast. It can also be planted at a rate of 6-8 pounds per acre if planted in 40-inch rows.

Corn for Silage

This species should be planted from March 1 to April 15. It should be planted at a rate of 12 to 20 pounds per acre planted in 30 to 40-inch rows.

Yield Potential of Late-Summer Planted Oats for Fall Grazing

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Producers are looking for opportunities to reduce the amount of hay required for their operations. One possibility that has sparked interest among growers was to extend the grazing season further into the fall and possibly early winter by planting oats in late summer. Previous studies have found that late-summer planted ‘Jerry’ oats have consistently provided more forage yield in the fall than winter wheat or cereal rye. However, limited information is available comparing late summer forage yield of oat varieties. This study was established to determine the yield potential of late-summer planted oats for fall grazing. The study consisted of forage and black oat varieties that were selected based on local availability. The forage varieties planted were: ‘Goliath’, ‘Jerry’, ‘Magnum’ and ‘Pearl’. The black oat varieties planted were “Cosaque’ and ‘Soil Saver’. Plots were no-tilled into sod-suppressed bermudagrass on September 1, 2022 at a 100 lb/acre seeding rate. Fertilizer was applied at planting according to soil test recommendations. Canopy closure, canopy height and forage yield were measured on December 1, 2022. Magnum, Pearl and Goliath had greater canopy closure than the other varieties, while Jerry oat had the most upright growth with a 16” average canopy height. Forage oat varieties produced more dry matter (DM) biomass than the black oat varieties, yielding an average of 1,710 lb DM/acre compared to 1,135 lb DM/acre, respectively.

Source: 2024 AFGC Proceedings

What I Have Learned Helping Clients Manage Weedy Grasses

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In over 10 years as an Extension Agent, I have helped clients manage their way through all kinds of unwanted vegetation. Almost without exception, the most difficult and discouraging weed management situations I encounter involved the presence and/or increasing prevalence of an undesirable grass species in an improved grass pasture. Taking the effort to quantify why these situations are so challenging can help lead to the development and implementation of more effective strategies to prevent/address these situations. The following are my observations: 1) Weedy grasses are particularly troublesome because they are difficult to distinguish from desirable grasses – they are often not a concern until the problem has become quite severe. 2) Producers understand that issues with several (not all) weedy grasses are strongly tied to poor grazing and/or fertility management. Having to acknowledge this causes some hesitancy in seeking control/management recommendations from sources like Extension. 3) Unfortunately, when an attempt is made to address the problem, the weedy species involved are generally quite hardy and inherently difficult to control. This is exacerbated by the lack of chemical control options available to control the weedy species without severely damaging the desirable species. Control recommendations tend to involve multi-step, multi-year endeavors that don't guarantee lasting success. Considering the limitations of reactionary responses, Extension should increase its emphasis on preventative measures including trainings related to grass identification and "pasture check-ups" to help clients find problems before they become severe. Additional management strategies should also be explored.

Source: 2024 AFGC Proceedings

Using Drone Images and Artificial Intelligence for Site-Specific Weed Management

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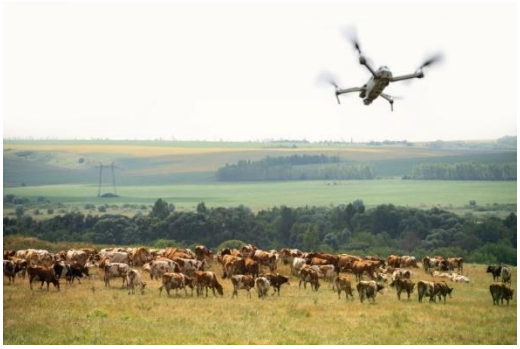
Weed encroachment negatively affects grassland productivity by reducing herbage allowance, stocking rates and livestock performance. *Amaranthus spinosis* L. is an invasive weed species widely used in grasslands. The high costs of chemical application and the global concern about environmental impacts restrict indiscriminate herbicide spraying in grasslands. Site-specific weed management is a weed management strategy based on weed spot-spraying that has the potential to overcome these issues. Drone images and artificial intelligence can provide valuable information for weed mapping to drive herbicide application in grasslands. We developed a deep convolutional neural network (CNN) to detect and map *Amaranthus spinosis* in common bermudagrass pastures using drone images. The study was carried out in twelve paddocks of approximately 1.3 ha each. The

experiment was established in a randomized complete block design, with three treatments and 4 blocks. The treatments were bermudagrass paddocks free of weeds, paddocks with weeds established in alternate strips, and paddocks with weeds spread throughout the whole area. The images used for the model development were taken using multirotor drone (model: DJI M100) equipped with an RGB camera (model: DJI X5). The CNN model was able to detect around 80% of the *Amaranthus spinosus* with an average prediction accuracy of 94%. Our weed mapping showed the potential of using the U-Net model to generate an herbicide application map to be inserted into the sprayer system, reducing up to 40% of the amount of herbicide applied in weed-infested areas.

Source: 2024 AFGC Proceedings



Drones can be used in forage systems

Soil-Test Biological Activity in a Grass and Grass-Legume Grazing Systems

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The introduction of forage legumes in grazing systems may increase the livestock sustainability and improve the delivery of ecosystems services from grasslands. Grass-legume mixtures add N to the system via biological N_2-fixation and might improve efficiency of N cycling. In addition, these mixtures might increase C deposition and improve litter quality, changing soil biological activity due to plant diversity. The methodology flush of CO_2 has been used to see the soil biological activity, and has showed association with N mineralization. The aim of this investigation was to evaluate the soil biological activity, through the flush of CO_2 in three grazing systems, including 'Argentine' bahiagrass with N fertilizer application, grass with a blend of clovers and grass with clovers plus Rhizoma peanut. There was no difference for CO_2 flush among the grazing systems. The treatments evaluated have similar biological activity, however the inclusion of legume forage in the grassland systems is important to reduce N fertilizer.

Source: 2024 AFGC Proceedings

Summary of Feed Value Analysis of Louisiana-Produced Hay in 2023

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Louisiana faced an exceptionally dry summer and fall in 2023, resulting in severe drought conditions. This weather condition significantly reduced the state's forage production, leading to a shortage of quality pasture. The LSU AgCenter agricultural economist, Guidry (2023) confirmed significant economic damages to the state's livestock industry and hay production due to the weather conditions.

During this period, the LSU AgCenter Forage Quality Analysis Lab (Forage Quality Lab (lsuagcenter.com)) received more non-conventional hay or agricultural byproduct samples (rice straw, corn stove, sorghum straw, cotton gin trash, etc.) than ever. Since we have less feeding experience with non-conventional hay products, producers wonder about the nutrient content in those feedstuffs. Although there are several commonly referred nutrient value indexes to compare hay quality, more commonly accepted indexes are RFV (Relative Feed Value), TDN (total digestible nutrient), and CP (crude protein). However, RFV was more likely developed by focusing on alfalfa hay quality grading and alfalfa is rarely produced forage in our state. The nutrient value analysis results of the submitted hay samples were summarized based on CP, TDN, and potential DMI (Dry Matter Intake), as presented in Table 1.

Table 1. The average crude protein (CP), total digestible nutrients (TDN) and dry matter intake (DMI) of hay samples submitted in 2023.

Sample	CP	TDN	DMI
	------% DM------		--% body wt--
Conventional Hay			
Alfalfa	23.5	70.9	2.3
Ann. Ryegrass	12.5	63.0	2.7
Forage Sorghum	9.3	58.8	2.3
Oats	9.5	57.3	2.2
Bermudagrass	9.5	60.8	2.5
Unidentified grass+	7.8	56.5	2.1
Bahiagrass	7.4	56.1	2.1
Crabgrass	7.2	55.2	2.0
Native Grass*	4.5	49.9	1.5
Non-conventional Hay			
Cotton gin trash	10.5	54.8	1.6
Peanut residue	10.4	53.0	1.7
Barnyardgrass	15.2	64.5	2.8
Johnsongrass	6.8	54.1	1.9
Corn stover	5.4	51.1	1.5
Grain sorghum straw	4.3	53.4	1.6
Rice straw	3.9	50.6	1.4
Soybean trash	2.6	42.3	0.6

+Unidentified species, based on producer's declarations

***Submitted as it is. Species are not identified**

Among the non-conventional hay, barnyard grass—despite its reputation as a fast-maturing annual weed—demonstrated some value as an alternative forage before seedhead development. Additionally, Johnsongrass indicated potential alternative hay use. However, caution is necessary when using Johnsongrass and its relatives (sorghum forages), as the forages can lead to nitrate toxicity when harvested under drought conditions.

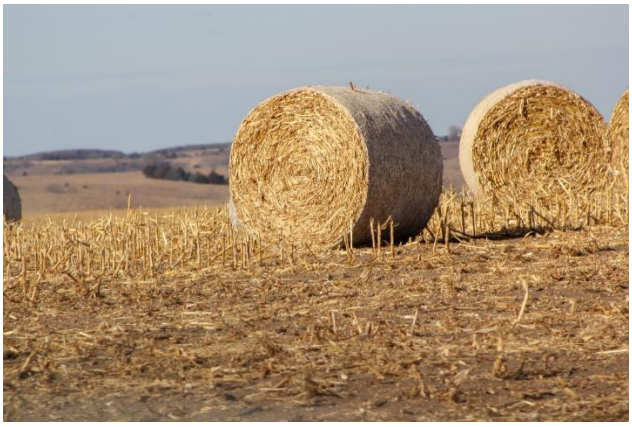
Even though some byproducts, such as cotton gin trash and peanut residue, are high in protein content, high fiber contents limit DMI potential. Other non-conventional hays (more likely straws) generally demonstrated insufficient protein (CP) and energy value (TDN), as well as low dry matter intake potential. Therefore, according to the USDA's grass hay quality guidelines, those byproducts contain insufficient nutrients for actively growing cattle or even belong to the utility level of quality (Table 2).

Table 2. Grass hay guidelines based on CP (crude protein).

Quality	Crude Protein (%)
Premium	**Over 13**
Good	**9-13**
Fair	**5-9**
Utility	**Under 5**

Rice straw, an abundant byproduct in Louisiana, holds significant value as an emergency feed source. However, the feeding value of rice straws is also low in CP, TDN, and DMI. A preliminary investigation on rice straw quality indicated that CP was slightly influenced by nitrogen fertilization rate, indicating that a possible higher N applied field produced higher CP containing straw. However, the differences in CP were not found among the straws produced in different parishes or rice varieties.

While the adoption of non-conventional hay underscores the resilience and resourcefulness of our producers in the face of unusual forage shortages, it is critical to understand the limitations of the nutritional value of available hay options.



Many types of crop residues were baled and used as forage in 2023