Mississippi Annual Cool-Season Forage Crop Variety Trials, 2022

Introduction

Varieties of several forage crops species are evaluated every year in the Mississippi Agricultural and Forestry Experiment Station (MAFES) small-plot forage trials. Entries are provided by seed companies as well as forage and breeding programs at state universities. Experimental and commercially available varieties are tested at one or more locations across Mississippi. All entries from privately owned companies are tested on a fee basis. Some varieties may be added by the MAFES forage variety testing program as a reference for comparison purposes. In addition, varieties of interest may also be added when applicable. Testing during 2020–2021 was conducted at the following locations: Leveck Animal Research Center Forage Unit (Mississippi State campus), Black Belt Branch Experiment Station (Brooksville, Mississippi), Coastal Plain Branch Experiment Station (Newton, Mississippi), and McNeill Research Unit (McNeill, Mississippi). The ryegrass trial in Brooksville was injured by herbicide drift, likely from aerial application. As a result, data were not included from ryegrass plots in Brooksville.

Data presented in Tables 2–9 are used to evaluate the performance of each forage crop within its respective trial. Mean and harvest comparisons were statistically evaluated by using the least significant difference (LSD) test at the probability level of $\alpha = 0.05$. The LSD value represents the minimum amount of dry matter yield that must be observed between any two varieties to determine if the difference was due to the variety's performance alone. Sources of seed are presented in Table 10.

Protocol

Annual ryegrass, small grains, and annual clover trials across the state were established between October and November of 2021. At all locations, soil samples were taken and analyzed by the Mississippi State University Soil Testing Laboratory. Trial areas were amended with lime and fertilized with phosphorus (P_2O_5) and potassium (K_2O) according to the soil test recommendations for individual species. Grass trials were additionally fertilized with 50 pounds of N per acre at planting and after the first harvest using urea ammonium sulfate (33-0-0/11S). Plots were 6 feet by 10 feet and planted using an ALMACO (Nevada, Iowa) precision cone seeder on a prepared seedbed. The trial design was a randomized complete block replicated four times. The seeding rates used are presented in Table 1.

Table 1. Recommended seeding rates for cool-season forage crops.

Type/Species	Seed rate
	lb/A
Annual Grasses	
Rye	100
Oat	100
Triticale	100
Ryegrass	30
Annual Clovers	
Arrowleaf	10
Berseem	25
Balansa	4
Ball	3
Crimson	30
Persian	8

Individual trials were harvested when 75% of the plots achieved 15 inches of growth. All plots were harvested to a 3-inch stubble height. Plots were harvested using a Winterstieger Cibus F (Winterstieger AG, Ried, Austria) equipped with a forage plot harvester reel type header that collected a 4.8-foot-by-10-foot swath to calculate the total yield. A subsample was collected and dried at 130°F until constant a weight was achieved to calculate dry matter concentration. Data were analyzed using the General Linear Model (PROC GLM) of SAS and mean separation was conducted using LSD at $\alpha = 0.05$.

Annual Ryegrass

Introduction

Annual ryegrass is the most relevant and versatile cool-season annual grass for livestock producers in Mississippi. In pasture and hay systems, annual ryegrass is a popular forage because of its ease of establishment, high nutritive value, high yielding potential, good reseeding ability, and adaptability to a wide range of soil types. Annual ryegrass can be established in pure stands or mixed with small grains and/or clovers for cool-season forage production. For these reasons, annual ryegrass is a staple for many cool-season grazing programs in Mississippi. Recommended planting dates vary by location but usually fall between September and mid-October for prepared seedbeds or late October if overseeded on a warm-season perennial grass pasture. Seeding rates are 30 pounds per acre for pure stands and 20 pounds per acre for mixtures with small grains and/or clovers. Annual ryegrass is very responsive to nitrogen fertilizer, and its use should be split into two applications for grazing systems. Reasonable productivity can be expected from November to May in the southern part of Mississippi and February to May in the northern part of Mississippi. Annual ryegrass should normally be allowed to reach an initial height of at least 10 inches before grazing begins.

Results

Data in Tables 2–5 present the yield performance of ryegrass varieties across Mississippi. The mean yield of the first harvest was 1,124, 1,162, and 1,350 pounds per acre for Starkville, Newton, and McNeill, respectively. The mean yield of the second harvest and subsequent total yield was greatest in McNeill. Newton was the only location that was only harvested twice, possibly due to dryer conditions combined with sandier soils. McNeill yields were above average for south Mississippi (8,686 pounds per acre), possibly due to relatively high organic matter soils being utilized after forage rotation.