

Effect of Planting Method and Seeding Rate on Overseeded Ryegrass Seedling Density and Yield

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Summary

Influence of four planting methods and four seeding rates of annual ryegrass (*Lolium multiflorum* Lam.) overseeded on a Coastal bermudagrass (*Cynodon dactylon* (L) Pers.) sod was investigated for 2 years at the Texas A&M University Agricultural Research and Extension Center at Overton. Drilling or broadcasting ryegrass seed on a lightly disked sod improved seedling density, early forage production, and total production compared with not disking the sod. Drilling instead of broadcasting seed on an undisturbed sod improved seedling density and early forage production at all seeding rates and improved total production at 15 and 25 lb seed/acre. Increasing seeding rate from 15 to 45 lb/acre resulted in a 3-fold increase in seedling density and a 2-fold increase in early forage production. Total yield increased 25 to 40% depending on planting method.

Introduction

Annual ryegrass acreage in Texas during the 1991-92 growing season was estimated at 900,000 acres; more than 95% of this acreage was used for winter pasture. Grazing in annual ryegrass can begin 2 to 4 months earlier than in the warm-season perennial grass alone and thus can reduce winter feeding expenses. Some ryegrass uses are for winter cover crop, roadside stabilization, overseeding lawns, and hay crop. Favorable attributes of annual ryegrass are ease of establishment, adaptability to a wide range of soils, high-quality forage, and ability to respond to nitrogen fertilizer.

Producers use various planting methods ranging from drilling into a well-prepared seedbed to broadcasting the seed on an undisturbed sod. Seeding rates range from 10 lb/acre when used as a carrier for small-seeded clovers to 100 lb/acre at dairies where early forage production is critical. A higher percentage of

the seed is assumed to develop into established plants when drilled into a disked sod than when broadcast on top of a grass sod because of seed to soil contact.

The interaction of four planting methods and four seeding rates on ryegrass seedling density and forage production was investigated for 2 years at the Texas A&M University Agricultural Research and Extension Center at Overton.

Procedure

Test sites were a Coastal bermudagrass sod mowed to a 1- to 2-in. height before planting. Planting methods were (1) light disking (disking to a depth of approximately 2 in.), drilling seed, (2) light disking, broadcasting seed, (3) drilling seed in undisturbed sod, and (4) broadcasting seed on undisturbed sod. Seeding rates were 15, 25, 35, and 45 lb/acre. In the drilled treatment, seed were planted in 7-in. rows at a soil depth of approximately 0.25 in. All plots were dragged with a harrow to help cover the seed in the disked plots and to shake the seed to the soil surface in the broadcast plots. Plot size was 8 by 15 ft. Experimental design was a split-plot in a randomized complete block with four replications. Whole plots were planting methods, and subplots were seeding rates.

A preplant fertilization rate of 84 lb of phosphorus (P) and potassium (K)/acre and 1 lb boron (B) and 16 lb sulfur (S)/acre was applied. The experiment was top-dressed with four applications of nitrogen (N) as ammonium nitrate at 50 lb/acre in February, March, April, and May.

Seedling density was estimated 6 weeks after planting by counting the number of seedlings in two 12- by 14-in. quadrates in each plot. Ryegrass plots were harvested with a Hege sickle bar harvester at a 2-in. cutting height.

Analysis of variance was used to determine significance of main effects and interactions. The relationship of seeding rate with seedling density, first-harvest yields, and total yield was determined through regression analysis.

Keywords: *Lolium multiflorum* / tillage method.