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Y. C. Newman
University of Florida

Jason A. Ferrell
University of Florida

A. R. Blount
University of Florida

Lynn E. Sollenberger
University of Florida

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Seeding rate and cultivar effect on bahiagrass establishment

Y.C. Newman, J.A. Ferrell, A.R. Blount, L.E. Sollenberger
 University of Florida, Agronomy department, 304 Newell Hall PO Box 110500. E-mail: ycnw@ufl.edu

Key words bahiagrass, seeding rate, establishment, weed competition

Introduction Bahiagrass is a pasture grass widely used in tropical as well as subtropical areas. In Florida, it is the backbone of the beef cattle industry. Although, bahiagrass is extensively distributed in Florida sandy soils and dominates the area planted to improved pastures, recommendations on seeding rates are variable, ranging from very low to high, and also varying across cultivars (Chambliss, 2003). The objectives of this study were to examine the effects of different seeding rates among bahiagrass cultivars and their end-of-season yields, as well as the weed competition dynamics.

Materials and methods The study was conducted at the Plant Science Research and Education Unit, University of Florida, Gainesville, (North-central Florida; 29°24'42"N, 82°6'35"W) on a prepared seed bed. Soils were loamy sands of the Gainesville series classified as Hyperthermic, coated Typic Quartzipsamments. Treatments were the factorial combination of four bahiagrass cultivars (Pensacola, Tifton 9, Argentine, FL Riata) and four seeding rates (10, 20, 40 and 60 kg ha⁻¹) arranged in a complete randomized block designed with three replicates. Bahiagrass accumulated DM herbage and weed percentage (broadleaf and grassy weeds) were measured at the end of the growing season (Oct. 25).

Results Bahiagrass end of season accumulated DM herbage was affected by seeding rate (P<0.01), and seeding rate had significant linear, quadratic, and cubic effects (P<0.05; Figure 1). Bahiagrass accumulated DM was greater when seeded at 40 kg ha⁻¹ and lowest at the lower seeding rates for all cultivars. Seeding rate and cultivar main effects were significant (P<0.05) on end of season weed percent. Weed encroachment decreased as the seeding rate increased from 10 to 40 kg ha⁻¹. The lowest weed encroachment (17%) was found at the 40 kg ha⁻¹ seeding rate but increased (23%) when higher rates were used. The highest weed encroachments (31 and 35%) occurred with the lower seeding rates (10 and 20 kg ha⁻¹, respectively). The newest released cultivar FL Riata had the lowest end-of-season percentage of weeds (17%) followed (in order) by Tifton 9, Argentine and Pensacola.

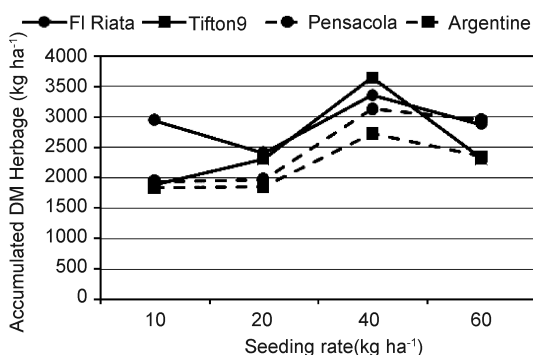


Figure 1 End of season accumulated herbage for different bahiagrass cultivars and seeding rates.

Table 1. Weed percentage of newly established bahiagrass as affected by seeding rate and cultivar

Seeding rate (kg ha ⁻¹)	FL-Riata	Tifton 9	Pensacola	Argentine	Mean
	%				
10	21	42	40	37	35 a*
20	18	35	40	34	31 a
40	12	10	29	20	17 b
60	17	16	31	32	23 ab
Mean	17b*	24 ab	34 a	30 ab	

* (P<0.05)

Conclusions Lower seeding rates (10 and 20 kg ha⁻¹) are likely to produce the lowest stand coverage measured as accumulated DM herbage within a growing season. This lower coverage was associated with higher weed encroachment observed at these lower seeding rates. Very high seeding rates (60 kg ha⁻¹) are not recommended as they decrease bahiagrass stand cover a fact related to competition of seedlings for resources such as nutrients and sunlight. Results warrant the examination of intermediate seeding rates between 20 and 40 kg ha⁻¹ under sandy soil conditions.

Reference

Chambliss, C.G. 2003. Tifton 9 Pensacola bahiagrass. SS-AGR-25, series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.