

EVALUATION OF FIVE BAHIAGRASS CULTIVARS IN SOUTHWEST FLORIDA

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ABSTRACT

Bahiagrass, mostly of the cultivar Pensacola, is the predominant grass in Florida and occupies two million hectares of the five million currently under pastures in the state. Several other cultivars exist and are available to ranchers through seed producing companies. This study compares five cultivars of bahiagrass (T-9, Pensacola, Argentine, Paraguay, and T-7) with respect to dry matter yield, nitrogen content, and digestibility in Southwest Florida. Evaluations were made at intervals of approximately 35 days from late June to early December. Forage production was greatest for T-9; this variety produced 35% more forage than Pensacola. All varieties behaved similarly regarding quality characteristics investigated.

KEYWORDS

Paspalum notatum, Tifton -9, Pensacola, Argentine, Paraguay, protein, IVODM, NDF

INTRODUCTION

There are nine types of bahiagrass (*Paspalum notatum* Flugge) introductions and strains, according to Burson and Watson (1995). Of these, eight are named cultivars which are Common, 'Argentine', 'Paraguay', 'Paraguay 22', 'Pensacola', 'Tifhi-1', 'Tifhi-2', and 'Wilmington' and 'Tifton-9'. Pensacola is the most widely grown bahiagrass cultivar in the US although other cultivars are planted in less extensive areas.

In Florida, bahiagrass is grown in two million hectares of land. Pensacola bahiagrass tolerates a variety of management practices and persists under unfavorable conditions such as low soil fertility, under fertilization, and over-grazing (Stanley Jr., 1994). Persistence of an introduced cultivar under the prevailing conditions in the area of establishment is a very important aspect to consider in forage research.

Southwest Florida presents some particular climatic conditions, in that the rainfall is extremely abundant from end of June to October with several periods of continuous flooding and temperatures are more tropical than those of north and central parts of the state. Since bahiagrass pastures are grazed during most of the year, not much hay is produced and the ranchers have to rely on supplements in the winter months and during the wet season. The purpose of this study was to test cultivars of bahiagrass in southwest Florida.

MATERIALS AND METHODS

Seeding of the cultivars was done in 1993, at the Southwest Florida Research and Education Center, in Immokalee, Florida. Vigorous stands were not obtained in the first year and re-seeding was done in 1994. The bahiagrass cultivars tested were: T-9, Pensacola, Argentine, Paraguay, and T-7. The soil in the area is an Immokalee sand, a widely occurring soil in the state. In April, 1995, the plots were mowed and fertilized with 56, 28, and 56 kg/ha of N, P, and K, respectively. Plots were 6 m x 3 m, and were separated by 1 m alleys. Treatments (five cultivars) were arranged in a randomized complete block design with five replications.

Harvests were done on June 14, July 21, August 22, September 27, November 01, and December 06, in 1995. Clippings were removed for dry matter yield, nitrogen, in vitro digestibility, and neutral detergent fiber determinations. The remainder of the grass produced in the plot was mowed and removed from the plot. The analyses

were done by the Forage Evaluation Support Laboratory, University of Florida, Gainesville.

Analysis of variance was performed on the data and means were separated by Duncan's Multiple Range Test.

RESULTS AND DISCUSSION

Tifton-9 had the greatest cumulative yield among the cultivars tested, although its yield was only significantly higher than that of Pensacola (Table 1). Tifton-9 is an improved cultivar of Pensacola bahiagrass and Burton (1989) has reported it to produce 47% more forage than Pensacola. In our study, a lower value, 35%, was obtained, possibly due to low nutrient status of the soil and regional climatic conditions. Overall the cumulative yields were very low for all varieties. Since collections were only started in mid June, considerable time of high production and vigorous growth was missed in early spring. Furthermore, fertilizer application was in late April, and more forage would have been produced provided this had been done earlier in the season, perhaps between mid February and mid March, for Southwest Florida. Yields observed thus far (data not presented) indicate that the cumulative values for 1996 will be of significantly greater magnitude than those for 1995.

Adequate levels of N concentration for bahiagrass are in the range of 1.8 to 2.2% (Wilkinson and Langdale, 1974). The concentrations verified in this study are all below this range (Table 1). It should be pointed out that the rate of N fertilizer applied was 56 kg/ha in one application in the spring. Higher levels are recommended by the Institute of Food and Agricultural Sciences of the University of Florida for medium production of bahiagrass forage, but presently ranchers do not normally apply N in excess of 70 kg per hectare of pasture per year, due to drastically reduced beef prices. In vitro digestibility and neutral detergent fiber values were similar for all cultivars (Table 1) and were within values commonly reported in the literature (Burson and Watson, 1995; Fisher et al., 1995).

Establishment of bahiagrass was initially slow, however, once a stand was obtained, cultivars have persisted well under the climatic conditions imposed in Southwest Florida. Three frosts and at least two 2-week periods of continuous standing water have been recorded at the experimental site annually for the past three years.

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Table 1

Cumulative dry matter yield, mean values of N and protein content, in vitro digestibility, and neutral detergent fiber of bahiagrass forage.

Bahiagrass Cultivar	Yield Mg/ha	N %	Protein %	IVODM %	NDFt %	NDFaf %
T-9	3.70a*	1.58	9.39	52.0	77.9	73.8
Pensacola	2.74b	1.47	9.20	51.9	78.6	75.3
Argentine	2.84ab	1.46	9.16	52.4	78.9	75.3
Paraguay	3.06ab	1.47	9.22	51.6	79.1	76.0
T-7	3.35ab	1.56	9.69	52.5	77.8	73.7

* Means within a column followed by the same letter are not significantly different ($P < 0.05$) by Duncan's Multiple Range Test.