EVALUATION OF ST. AUGUSTINEGRASS FERTILIZATION REGIMENS

J.O. Suazo[1], S.M. Dorrian[1], K.B. Aldrich[1], K.H. Quesenberry[1], J.L. Buhlman[1], J.B. Unruh[2], and K.E. Kenworthy[1].

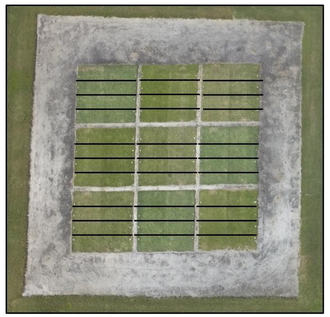
[1] Agronomy Department, University of Florida, Gainesville, FL, USA

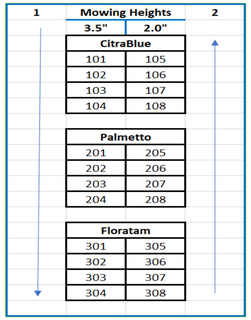
[2] Environmental Horticulture Department, West Florida Research and Education Center University of Florida, Jay, FL, USA

Introduction

- St. Augustinegrass (*Stenotaphrum secundatum*) is a warm-season subtropical species and is the most widely produced and utilized turfgrass for sod and lawns in Florida.
- Fertilization is an important component of lawn management; however, there are environmental concerns associated with the application of fertilizers. The fertilization of turfgrass areas is often associated with leaching and runoff of nutrients that can negatively impact bodies of water.
- Environmental concerns have led some counties to establish seasonal restrictions over-fertilization (blackout period); these periods usually prohibits the applications of nitrogen and phosphorus during rainy seasons.
- Further research is required on fertilization regimens based on blackout periods on how well the lawn grows.
- The objective of this study was to evaluate different fertilization regimens across three cultivars and two mowing heights.

Figure 1 & 2. Experiment's design





Materials & Methods

- Trial was located at the Plant Science Research and Education Unit (PSREU), FL. It was established in fall 2017 and fertilization started in fall 2018. Data was gathered from fall 2018 to fall 2020.
- Experimental design was a RCBD with a strip-split plot design and three repetitions (Fig 1 & 2).
- The treatments were three St. Augustinegrass cultivars ('CitraBlue', 'Floratam', and 'Palmetto') as whole plots, two mowing heights (5.0 and 8.75 cm) as subplots, and four fertilization regimens (UF-IFAS recommendations, summer blackout, national retail product recommendations, and an untreated control) as sub-subplot (Table 1).
- Variables measured were turf quality (TQ), color, and density (on a scale of 1-9), leaf chlorophyll levels (SPAD), and canopy height. Data was gathered monthly

Table 1. Fertilization regimens

Fertilization Programs
Scotts – 4x year: 0.8 lb/ 1000sqft per application – 3.2 lbs N total 21.96g Scotts Crabgrass Preventer Plus Fertilizer – February 15 20.41 g Scotts LawnPro Step 3 Lawn Food – April 01 20.41 g Scotts LawnPro Step 3 Lawn Food – June 01 20.41 g Scotts LawnPro Step 4 Lawn Fertilizer – September 01
IFAS – 4x year: 1.0 lb/ 1000sqft per application – 4.0 lbs N total 54.43g Scotts Crabgrass Preventer Plus Fertilizer – February 15 54.43 g Scotts IFAS – 15-0-15 April 01 54.43 g Scotts IFAS – 15-0-15 August 01 54.43 g Scotts IFAS – 15-0-15 October 01
Blackout – 3x year: 1.0 lb/ 1000sqft per application – 3.0 lbs N total 18.99g Polyon 43 – 15-0-15 – April 01 18.99 g Polyon 43 – 15-0-15 – May 01 18.99 g Polyon 43 – 15-0-15 – October 01
Unfertilized Control N/A

Statistical Analysis

- Monthly data was grouped by seasons (spring, summer, and fall).
- A two-way ANOVA with interactions was performed ($P \leq 0.05$) and a Duncan's (MRT).
- Statistical Model: y = block + cultivar + whole plot error + mowing height + cultivar*mowing height + subplot error + fertilizer + cultivar * fertilizer + mowing height * fertilizer + cultivar * mowing height * fertilizer + sub-subplot error.

Results & Discussion

Turf Quality, Color, Density, and SPAD units

- There were significant differences in TQ, color, density, and SPAD units due to the fertilization regimens and the different cultivars. There were no significant interactions between the different independent variables.
- No added fertility showed lower performance.
- Differences between the three regimens were minimal (Fig 3).
- CitraBlue presented the best TQ, color, density, and SPAD values, followed by Palmetto and Floratam.

Table 2. Results based on fertilization regimens

Fertilizer	Turf Quality	Color	Density	Chlorophyll content	Canopy height
Blackout	6.43 a*	6.48 a	6.54 a	34.96 ab	7.04 b
IFAS	6.36 a	6.39 a	6.49 ab	35.68 a	7.33 a
Scotts	6.22 b	6.24 b	6.38 b	34.45 b	6.82 c
UTC	5.20 c	5.34 c	5.35 c	33.31 c	5.90 d
CV (%)	14.41	15.07	14.27	25.84	23.72

* Values in the same column followed by the same letter are not significantly different at $P \leq 0.05$

Table 3. Results based on cultivars

Cultivar	Turf Quality	Color	Density	Chlorophyll content	Canopy height
CitraBlue	6.58 a*	6.64 a	6.73 a	39.80 a	5.12 c
Palmetto	5.92 b	6.01 b	6.14 b	33.81 b	7.01 b
Floratam	5.66 c	5.69 c	5.71 c	30.19 c	8.11 a
CV (%)	14.41	15.07	14.27	27.84	23.72

* Values in the same column followed by the same letter are not significantly different at $P \leq 0.05$

Figure 3. Turfgrass quality across fertilization programs

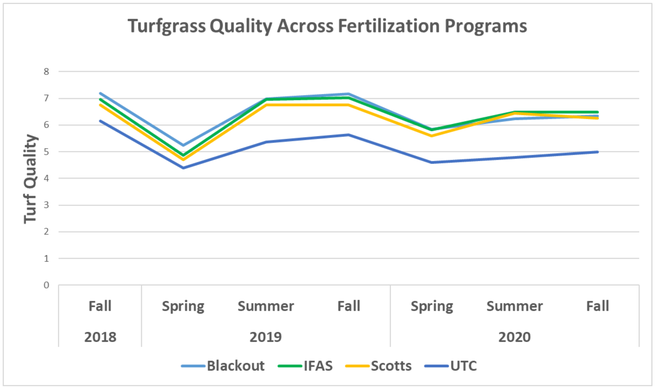


Figure 4. Turfgrass quality across fertilization programs

	2018	2019			2020		
Fertilizer	**Fall**	**Spring**	**Summer**	**Fall**	**Spring**	**Summer**	**Fall**
Blackout	7.18 a*	5.25 a	6.99 a	7.17 a	5.84 a	6.23 a	6.35 a
IFAS	6.96 ab	4.86 b	6.96 a	7.02 ab	5.83 a	6.48 a	6.48 a
Scotts	6.76 b	4.70 b	6.75 a	6.75 b	5.59 a	6.44 a	6.25 a
UTC	6.16 c	4.39 c	5.36 b	5.63 c	4.59 b	4.79 b	4.99 b
CV (%)	5.59	8.51	5.76	7.27	8.32	8.80	6.84

* Values in the same column followed by the same letter are not significantly different at $P \leq 0.05$

- On a seasonal basis, there were minimal differences between IFAS recommendations and the Blackout regimen for turfgrass quality.
- CitraBlue was the better cultivar in response to these fertilization regimens.