



## A Detailed Description

*Of Captiva, a Chinch Bug Resistant St. Augustine with a Slow Leaf Growth Habit, Developed by the University of Florida*

### Summary

- A new St. Augustine grass named NUF-76 (Captiva) is introduced
- The grass features resistance to two insects; the southern chinch bug and the plant hopper insect
- Captiva was developed with slow leaf blade growth for reduced mowing requirements

### Results

- Captiva resisted all tested populations of southern chinch bug found in the state of Florida. Chinch bugs feeding on Captiva had a 91.3% mortality rate compared to only 47.2% mortality rate for Floratam.
- The plant hopper insect survived only 3.2 days after feeding in Captiva compared with over 18 days when feeding on Classic St. Augustine.
- Captiva was shorter after 21 days of growth than Floratam was at only seven days.

## **NUF-76, A diploid St. Augustinegrass resistant to two insect pest.**

### **Abstract**

Perennial St. Augustinegrass having plant hopper and southern chinch bug insect resistance, narrow leaf blades and slower leaf extension rates thus requiring less frequent mowing.

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### **References Cited**

<u>PP6372</u>	Nov., 1988	Mixson et al.	Plt/
<u>PP7852</u>	Apr., 1992	Busey	Plt/

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### **Claims**

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#### **What is claimed is:**

1. A new and distinct variety of St. Augustinegrass, substantially described and illustrated, characterized by its distinctive combination of insect resistance, vegetative characteristics and reduced mowing frequency.

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### **Description**

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#### **BACKGROUND OF THE INVENTION**

This invention relates to a new and distinct St. Augustinegrass that is the result of a complex hybridization program to develop a dark green, fine bladed St. Augustinegrass (Figure 1). Parents were selected for darker green foliage color,

narrow leaf width, low maintenance and resistance to common insect pest and disease. This genotype was first labeled as FA 1997-108 and evaluated as NUF-76. This selection was propagated vegetatively to provide planting stock for studying performance and distinguishing NUF-76 from other St. Augustinegrass cultivars.

## **SUMMARY OF INVENTION**

NUF-76 is a fine bladed, dark green St. Augustinegrass, *Stenotaphrum secundatum* that is resistant to the southern chinch bug, *Blissus insularis* and the plant hopper, *Liburnia pseudoseminigra*. NUF-76 has slow leaf extension growth rates that result in the need for reduced frequency of mowing, thereby saving on fuel necessary for lawn maintenance and for wear and tear of the lawn mower.

## **BRIEF DESCRIPTION OF THE ILLUSTRATIONS**

Figure 1. Pedigree of NUF-76

Figure 2. NUF-76 St. Augustinegrass leaf blade height two weeks since mowing in experiments conducted in the month of July at University of Florida, IFAS, Everglades Research and Education Center.

Figure 3. Floratam St. Augustinegrass leaf blade height two weeks since mowing in experiments conducted in the month of July at University of Florida, IFAS, Everglades Research and Education Center.

Figure 4. Comparison of Floratam (left) and NUF-76 (right) runner growth and internode lengths.

Figure 5. Comparison of Floratam (right) and NUF-76 (left).

## **DETAILED DESCRIPTION OF THE VARIETY**

### **Insect and Disease Resistance**

NUF-76 is resistant to two common insect pests, the southern chinch bug and the plant hopper (Tables 3 and 4). NUF 76 is the first St. Augustinegrass reported to have resistance to the plant hopper, *Liburnia pseudoseminigra*. Plant hoppers feeding solely on NUF-76 fail to survive more than 3.2 days on average compared to susceptible host plants in which they survived 10 or more days. On the most susceptible host plants (Classic and Palmetto), reproduction occurred.

**Table 1.** Survival of *Liburnia pseudoseminigra* plant hopper on NUF-76 and comparison St. Augustinegrasses<sup>2</sup>.

Variety	Days of Survival
Classic <sup>1</sup>	18.2 a
Palmetto <sup>1</sup>	13.0 ab
Bitterblue <sup>1</sup>	11.2 b
Seville <sup>1</sup>	8.2 bc
Floritam	3.4 c
FX-10	3.4 c
NUF-216	3.2 c
FSHA-115	3.2 c
NUF-76	3.2 c
Floralawn	2.6 c

<sup>1</sup> Plant hoppers survived past the 20 day duration of this experiment, at which point host plant fitness to support plant hopper survival diminishes.

<sup>2</sup> Means followed by the same letter are not significantly different (alpha = 0.05) using a protected LSD test (SAS 1996)

NUF-76 is resistant to all tested populations of southern chinch bugs from the state of Florida. Chinch bug survival was significantly higher than on Floritam. Mortality on NUF-76 was similar to FX-10 and NUF-216, both selections having large leaves compared to NUF-76.

**Table 2.** Percent mortality of southern chinch bug feeding on NUF-76 and comparison St. Augustinegrass held two weeks on each cultivar. Chinch bugs collected from nine cities or their suburbs in geographic regions of Florida<sup>1</sup>.

Variety	Mean (%)	SD	Range
FX-10	94.9 a	10.3	69-100
NUF-216	94.6 a	9.6	71-100
NUF-76	91.3 a	12.1	63-100
Floratine	60.6 b	23.8	14-95
Floritam	47.2 b	27.9	0-71

<sup>1</sup> Means followed by the same letter are not significantly different (alpha = 0.05) using a protected LSD test (SAS 1996).

## Leaf Extension Rate

Leaf extension rate of NUF-76 is significantly slower than other tested St Augustinegrass cultivars seven days after mowing. At 14 days after mowing, leaf growth is similar to Seville and FX-10. After 14 days the height of NUF-76 is half the height of Floratam. Three weeks after mowing, leaf growth of NUF-76 averages 7.6 cm which is similar to Seville and 2.5 times shorter than Floratam. NUF-76 is shorter after 21 days of growth, than Floratam after 7 days. Using cultivars with slower leaf extension rates such as NUF-76 can reduce the frequency of mowing, thereby reducing the amount of fuel required to maintain a lawn and also reduce wear and tear of the mower. In a state such as Florida where we have over 4 million acres of managed turfgrass, elimination of a single mowing will result in significant fuel savings.

**Table 3.** Leaf blade growth of NUF-76 and comparison St. Augustinegrasses one, two and three weeks after mowing<sup>1</sup>.

Variety	Leaf Growth from Last Mowing (cm)		
	7 days	14 days	21 days
NUF-76	3.8 c	6.0 c	7.6 d
Seville	5.4 c	6.3 c	8.4 d
FX-10	4.6 c	7.4 c	10.3 c
NUF-216	7.2 b	9.8 b	13.6 b
Floratam	9.6 a	13.0 a	19.0 a

<sup>1</sup> Means followed by the same letter are not significantly different (alpha = 0.05) using a protected LSD test (SAS 1996).

## Leaf Morphology

NUF-76 has the shortest, narrowest, and smallest leaf area of comparison St. Augustinegrass cultivars. These reduced leaf characteristics result in NUF-76 appearance to be a fine leaf texture St. Augustinegrass with a dense and compact canopy.

**Table 4.** Measurements of leaf characteristics of NUF-76 and comparison St. Augustinegrass<sup>1</sup>.

Variety	Leaf Length (cm)	Leaf Width (cm)	Leaf Area (cm <sup>2</sup> )
NUF-76	10.65 d	0.67 d	6.26 d
Seville	13.02 c	0.80 c	9.17 c
FX-10	15.32 b	0.92 a	12.23 b
NUF-216	17.02 b	0.80 b	11.67 b
Floratam	20.44 a	0.90 a	15.47 a

<sup>1</sup> Means followed by the same letter are not significantly different (alpha = 0.05) using a protected LSD test (SAS 1996).

## Reproductive Structures

Inflorescences of NUF-76 are terminal and auxiliary, averaging 1.85 spikes per flowering shoots. Mean spike length of NUF-76 is 97.75 mm, equal in shortness to 1997-6 and shorter than other cultivars. Floral region measurements averaged 57.35 mm for NUF-76 which was shorter than all cultivars except for FX-10. Stigmas are white and anther sac color is yellow, which is similar to that of Seville

**Table 5.** Inflorescence characteristics NUF-76 and comparison St. Augustinegrass<sup>1</sup>.

Variety	Spike Length (mm)	Floral Region Length (mm)	Number of Spiklets (seeds)	Spike number per shoot
FX-10	120.80 de	59.00 d	39.80 a	2.30 bcd
NUF-216	161.75 a	88.60 b	36.05 a	2.80 ab
NUF-232	132.60 cd	84.35 b	30.40 b	2.70 abc
1997-6	107.55 ef	71.25 c	29.50 b	2.85 a
Floritam	153.40 ab	99.80 a	28.55 bc	2.10 d
Seville	121.10 de	68.65 c	21.15 d	2.20 cd
Raleigh	142.40 bc	71.30 c	21.05 d	2.25 cd
NUF-76	97.75 f	57.35 d	24.95 cd	1.85 d

<sup>1</sup> Means followed by the same letter are not significantly different (alpha = 0.05) using a protected LSD test (SAS 1996).

## Growth and Ground Coverage

Growth of NUF-76 lateral shoots was equal to other cultivars at 6 weeks from transplanting rooted cutting into the field. However, at 9 weeks lateral shoot lengths of NUF-76 was the shortest. Internode counts however did not differ among cultivars and reduce lateral length was attributed to shorter internodes. As a result, ground coverage during grow-in after sprigging or plugging a new field by NUF-76 was slowest for all cultivars tested. Starting with 3% coverage by the grass plug, mean coverage by NUF-76 was 27.8% after eight weeks. By 16 weeks of growth, all cultivars had 96% ground coverage or better indicating that coverage by NUF-76 will catch up to the other cultivars and coverage approach 100%.

**Table 6.** shoot length and node count of NUF-76 and comparison St. Augustinegrass<sup>1</sup>.

Variety	Shoot length at 6 weeks (cm)	Number of internodes 6 wks	Shoot length at 9 weeks (cm)	Number of internodes 9 wks
NUF-76	10.1 a	4.0 ab	30.2 c	8.4 a
Seville	17.0 a	4.6 a	49.0 b	9.5 a
FX-10	8.9 a	2.5 b	40.5 bc	7.7 a
NUF-216	16.7 a	3.8 ab	61.2 a	10.2 a
Floritam	15.9 a	4.6 a	60.6 a	10.2 a

<sup>1</sup> Means followed by the same letter are not significantly different (alpha = 0.05) using a protected LSD test (SAS 1996).

**Table 7.** Percentage coverage by NUF-76 and other comparison St. Augustinegrasses. Planted October 14, 2004 at University of Florida, IFAS Everglades Research and Education Center on 30 cm spacing<sup>1</sup>.

Variety	Percentage of Ground Cover by Turfgrass		
	8 weeks 12/13/04	12 weeks 1/19/05	16 weeks 2/22/05
NUF-76	27.5 c	56.2 c	96.0 b
Floritam	38.8 b	83.8 b	100.0 ab
NUF-216	48.8 a	87.5 b	98.5 a
Seville	47.5 a	94.2 a	99.5 a

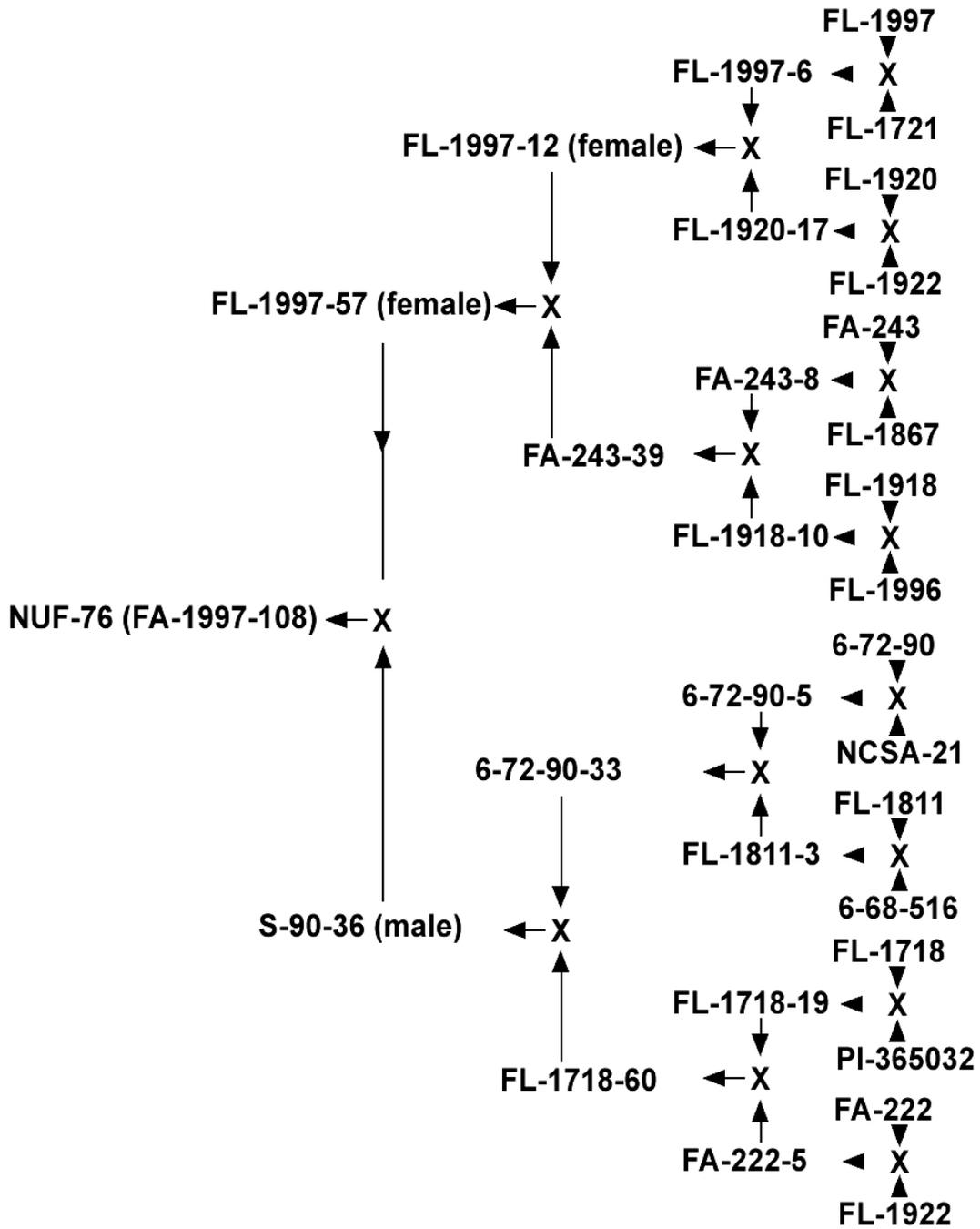
<sup>1</sup> Means followed by the same letter are not significantly different (alpha = 0.05) using a protected LSD test (SAS 1996).

**Table 8.** Anther and stigma color of NUF-76 and other comparison St. Augustinegrass varieties<sup>1</sup>.

Variety	Anther Color	Stigma Color		
NUF-76	Yellow	White		
Seville	Yellow	Light Purple		
Floritam	Orange Yellow	Purple		
Raleigh	Yellow	White		
Bitterblue	Orange Yellow	Light Purple		
Palmetto	Orange Yellow	White		

<sup>1</sup> Color as observed at pollen dehiscence.

**Figure 1. Pedigree of NUF-76**

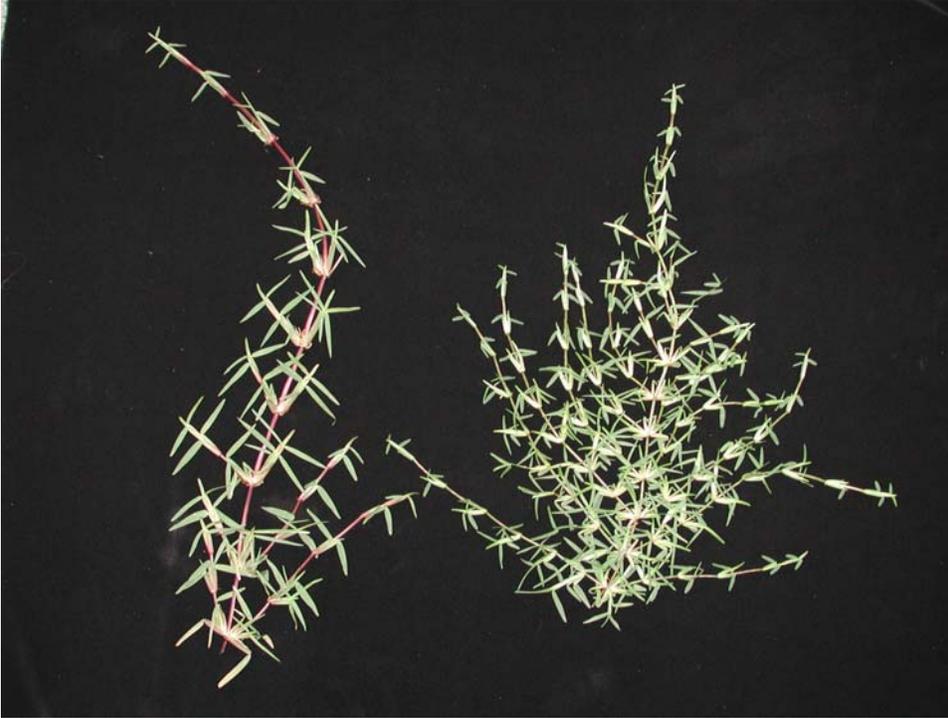




**Figure 2.** NUF-76 St. Augustinegrass leaf blade height two weeks since mowing in experiments conducted in the month of July at University of Florida, IFAS, Everglades Research and Education Center.



**Figure 3.** Floratam St. Augustinegrass leaf blade height two weeks since mowing in experiments conducted in the month of July at University of Florida, IFAS, Everglades Research and Education Center.



**Figure 4.** Comparison of internode length and shoot characteristics of Floratam (left) and NUF-76 (right) runner growth and internode lengths.



**Figure 5.** Comparison of shoot density and leaf size of Floratam (right) and NUF-76 (left).