

Response of Three St. Augustinegrass Cultivars to Sting Nematodes

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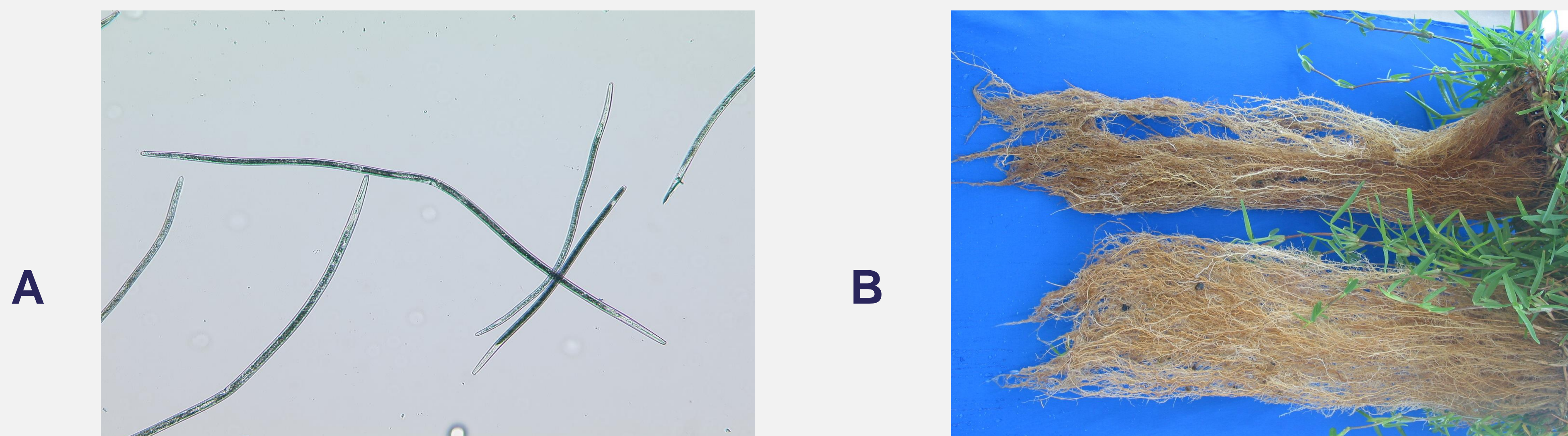
Summary

This research was conducted to evaluate the response of 'Captiva', 'Floratam' and 'Palmetto' St. Augustinegrass (*Stenotapharum secundatum* [Walt] Kuntze) to sting nematode (*Belonolaimus longicaudatus* Rau). Our results show that Captiva and Palmetto are similar to Floratam in their susceptible response to sting nematodes, and that these three cultivars would not be expected perform well on sites known to have high sting nematode populations.

Background/ Rationale

St. Augustinegrass is the predominant turfgrass in Florida, and the predominant cultivar is Floratam. Southern chinch bug (*Blissus insularis* Barber) is thought to be the pest most limiting persistence and turf quality. Although Floratam showed resistance to chinch bug when initially released, new insect biotypes have developed so that Floratam is now susceptible to the predominant populations. A new cultivar Captiva has been released that shows resistance to current chinch bug populations, however, sting nematode (Fig. 1) is also often identified as a major pest limiting persistence of Floratam, and the response of Captiva to sting nematode needs to be determined. Palmetto, a cultivar increasing in popularity in Florida, was also included in the research.

Figure 1. (A) Sting nematode (*Belonolaimus longicaudatus* Rau) and (B) St. Augustinegrass grown in tubes with (top) and without (bottom) sting nematodes.



Methodology

The response of Captiva, Floratam, and Palmetto St. Augustinegrass was evaluated when grown in 650 cm³ plastic tubes in a greenhouse and inoculated with 0, 50, or 300 sting nematodes per tube. Two stolons per tube, of the three grasses, were allowed to root for 3-wk prior to infestation of the soil with nematodes. Plants were grown for 90d in the GH and were clipped every two to three weeks to maintain approximately 7 to 10 cm length stolons. At termination of the experiment, nematodes were extracted from the complete soil volume of the growth tubes and counted. Roots were washed clean of soil and scanned with WinRHIZO[®] software to determine total root lengths, mean root diameters, and other root characteristics. After completion of the root scans, roots were dried to determine total root dry weight per plant. The experiment was conducted from September to December 2010 and was repeated from March to June of 2011.

Results

There were no differences among the three cultivars in the number of sting nematodes supported, but all cultivars supported relatively high numbers of nematodes (Table 1). There were differences in final nematode numbers among the inoculation rates, where the 50 nematode per tube rate increased to a mean of 90 per plant and the 300 nematode rate decreased to 120 per plant (Table 1). Captiva had the smallest root diameter, with Palmetto intermediate, and Floratam having the largest diameter (Table 2).

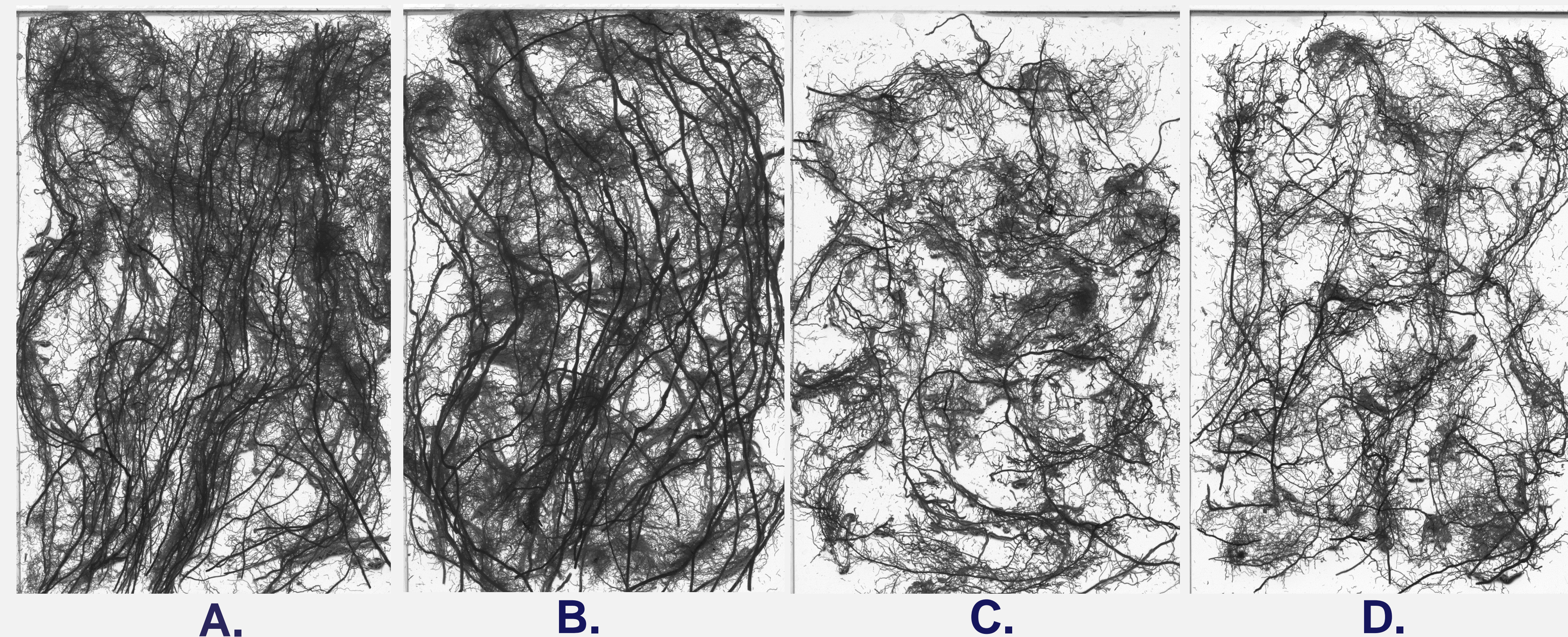
Table 1. Effect of St. Augustinegrass cultivars on sting nematode numbers in two greenhouse experiments.

Entry	Sting Nematode Numbers by Date Averaged Over Inoculation Levels		Sting Nematode Numbers by Inoculation Levels Averaged Over Dates	
	Fall 2010	Spring 2011	50 Inoc	300 Inoc
Captiva	140	95	83	153
Floratam	114	129	79	169
Palmetto	99	150	112	137
Mean	118	125	91	120
Isd.	ns	ns	ns	ns

Table 2. Root diameter, root volume and root tip number of Captiva, Floratam, and Palmetto St. Augustinegrass when grown in 650 cm³ tubes.

Cultivar	Diameter	Volume	Tips
Name	--mm--	--cm ³ --	--No.--
Captiva	0.35b	2.58b	10320a
Floratam	0.48a	4.98a	8800b
Palmetto	0.31c	2.12b	9570ab
Mean	0.40	3.23	9560

Figure 2. Scanned roots of Captiva (A & C) and Floratam (B & D) inoculated with 0 (A & B) and 300 (C & D) sting nematodes per 650 cm³ per container.



Conclusions

- ✓ These results suggest that in these 650 cm³ volume tubes sting nematode population densities of between approximately 100 and 150 per plant will be supported by these St. Augustinegrass cultivars.
- ✓ The non-infested treatment had higher root weights and root lengths for all cultivars demonstrating that sting nematodes are a significant pest on St. Augustinegrass.
- ✓ There were no differences among cultivars in numbers of sting nematodes supported.
- ✓ Root diameter was higher for Floratam than for Palmetto and Captiva.
- ✓ Floratam had larger root volume than the recently released cultivar Captiva and Palmetto.