

Bermudagrass (Cynodon spp.) and Seashore Paspalum (Paspalum vaginatum) Cultivar Response to the Sting Nematode (Belonolaimus longicaudatus)

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Objectives:

1. Determine the range of response (resistance or tolerance) of bermudagrass and seashore paspalum cultivars to the sting nematode and identify the best performing cultivars.
2. Investigate if a proposed alternative method for assessing sting nematode response is as effective or more efficient than traditional methods.

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While sting nematodes are found most commonly in sandy coastal areas, the University of Florida Nematode Assay Lab has diagnosed this nematode on bermudagrass from inland areas of Alabama, Mississippi, Arkansas, Louisiana, Georgia, Tennessee, Texas, Oklahoma, Kansas, and California.

Recent cancellation of fenamiphos (Nemacur, Bayer CropScience) has resulted in the need of better nematode management tactics. Currently, Curfew Soil Fumigant (Dow Agrosciences) is the most effective management for sting nematodes. However, Curfew is not cost effective and environmental restrictions highlight the need for alternative options.

Utilization of resistant or tolerant cultivars is the most efficient, least costly practice for nematode management on turf. Although a range in responses of bermudagrass to sting nematodes has been found, most cultivars were reported as susceptible. Information about the responses of several newer bermudagrass and seashore paspalum cultivars is lacking.

Separate glasshouse experiments for bermudagrass and seashore paspalum will be conducted to assess the range of these species for response to sting nematodes. In 2008, two experiments were conducted using six cultivars of bermudagrass in one experiment and three cultivars of seashore paspalum in the second.

All cultivars were propagated by means of nematode free aerial stolons into clay pots (1,500 cm³) with a USGA sand. Once established, inoculations were done on June 21, 2008 using 200 nematodes per

pot. The experiments were maintained at a temperature range of 24° C to 34° C under natural daylight. They were trimmed at 1.0-cm mowing height and fertilized once every other week using 18-3-6 (N-P-K) at a rate of 2 kg / 100 m² (4 lb / 1000 sq. ft) per year.

Experiments were harvested 90 days after inoculation by removing a 5-cm diameter core from the center of each pot. Nematodes were extracted from the soil cores and counted under a microscope. Roots were analyzed using WinRhizo root scanning software to determine root lengths and surface areas.

Reproduction and mean nematode counts were greatest on 'Champion' bermudagrass with no differences between the remaining cultivars. Significant differences were not found between the seashore paspalum cultivars. However; biologically, 'SeaDwarf' was the best host for sting nematodes.

Mean total root length comparisons were made within a given cultivar for its uninoculated and inoculated treatments. For all cultivars except 'TifEagle', the inoculated treatments led to reductions in total root length. Differences between uninoculated controls and inoculated treatments were significant only for 'Champion' bermudagrass, and 'Aloha' and 'Sea Isle 1' seashore paspalum.

The percent reduction of 'Champion' was similar to all bermudagrass cultivars except 'TifEagle'. However, the uninoculated root length of 'Champion' was approximately one-third of the other greens-type uninoculated root lengths. This may be the basis for the difference observed for its inoculated treatment.



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Similar reductions between 'Champion' and other cultivars will be more detrimental to 'Champion' due to its smaller root system. Because 'Champion' was a better host for sting nematode reproduction (least resistant) and its root system was more heavily damaged (poor tolerance), it was considered the most susceptible cultivar to sting nematode damage in this study. 'SeaDwarf' supported higher nematode reproduction than other seashore paspalum cultivars.

Summary Points

- The sting nematode caused damage to 'Champion', 'Sea Isle 1', and 'Aloha'.
- Sting nematode damage was not as significant to 'TifSport', 'Celebration', 'Floradwarf', 'TifEagle', 'Tifgreen', or 'SeaDwarf'.
- 'Champion' was the most susceptible bermudagrass cultivar exhibiting poor resistance and tolerance.
- 'SeaDwarf' exhibited better tolerance than other seashore paspalum cultivars studied.