

Comparative Control Methodology of *Belonolaimus longicaudatus* and *Meloidogyne* Species on Golf Course Putting Greens - Glenn Galle and Jim Kerns, North Carolina State University

- Sting nematode has been observed deeper in the soil column during the summer months than expected
- Sting nematode numbers increase earlier in the spring on creeping bentgrass putting greens than bermudagrass greens
- Root-knot nematode sampling has been delayed, and results are unavailable
- Cultivar screening is currently in the planning stage, and the project is expected to start in the spring of 2017

Progress Report and Research Summary

Trial one from the research project is progressing as anticipated, with the sampling for *Belonolaimus longicaudatus* entering its third year at Raleigh Golf Association ('L-93' creeping bentgrass) and Benvenue Country Club ('Champion' bermudagrass), and is about eighteen months along at Wilson Country Club ('A-1/A-4' creeping bentgrass). The data shows that sting nematode reaches its highest numbers in late summer on both bermudagrass and creeping bentgrass courses with numbers dropping significantly during the winter months. However, differences in start timing of nematode population growth has been observed with numbers increasing in March or April on creeping bentgrass putting greens whereas they increase in late April and May on bermudagrass putting greens. This is significant and indicates that earlier nematicide application is necessary depending upon the turfgrass species used.

An unanticipated result is the dramatic shift of nematode populations from the top ten centimeters of the soil column during the spring months to the middle ten centimeters during the summer months on creeping bentgrass in 2015 as seen in figure two. A similar trend was observed in creeping bentgrass in 2016, although sting nematode was more evenly distributed throughout the entire thirty-centimeter soil column during the summer. From figure one, the bermudagrass course also showed an even nematode population distribution throughout the entire thirty-centimeter soil column during the summer months of both years. This is beyond the rooting depth of both turfgrasses and we are further investigating why the nematodes are this deep in the soil column. In both turfgrass species, the winter months show a majority of the nematodes in the top ten centimeters of the soil column and at significantly high population levels, indicating that feeding may be occurring during the winter months when bermudagrass is dormant and creeping bentgrass is slow to produce new roots. This indicates the potential addition of a fall nematicide application to a current spray program may be necessary to protect turfgrass roots from nematode feeding when they are highly vulnerable.

The final year of sampling for sting nematode will help to provide stability to trends currently present, and potentially will clear up any differences observed between the two years of current data.

The *Meloidogyne spp.* sampling portion of the project at Sedgefield Country Club ('Champion' bermudagrass) has just finished its first year, and data is inconclusive and erratic. Unfortunately, we were asked to vacate the course for a year due to winter damage and therefore had to start sampling a year after we started the sting nematode portion. Sampling for three years is still planned.

Trial two from this project is currently in the planning phase. We are collecting nematodes and establishing populations in the greenhouse for use in the cultivar screen. Cultivar selection is also occurring at this time, and seed or sprig collection will begin in the winter. The planned start of the project is spring of 2017 and it is expected to take approximately one year.

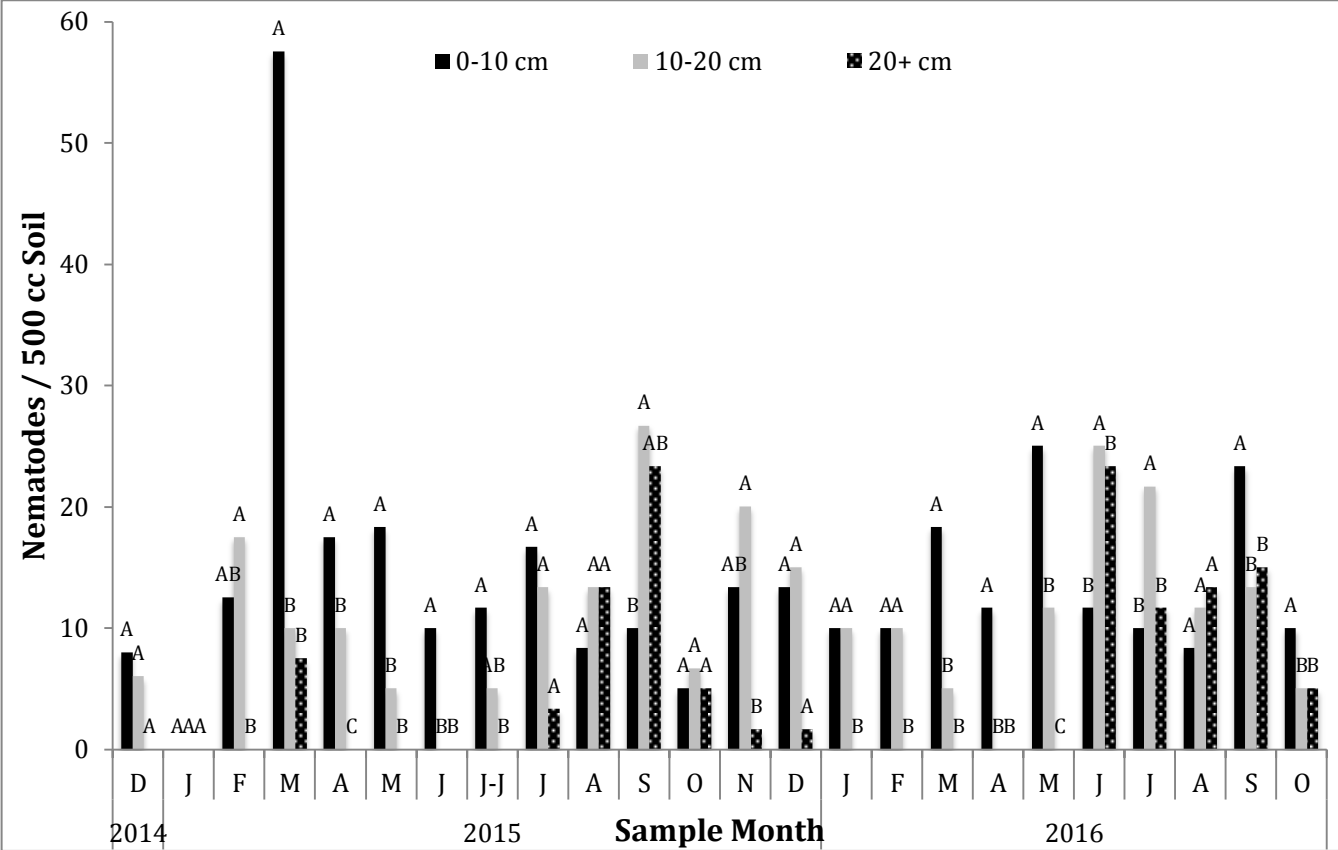


Figure One. Sting nematode population sampling distribution on bermudagrass from Benvenue Country Club, Rocky Mount, NC.

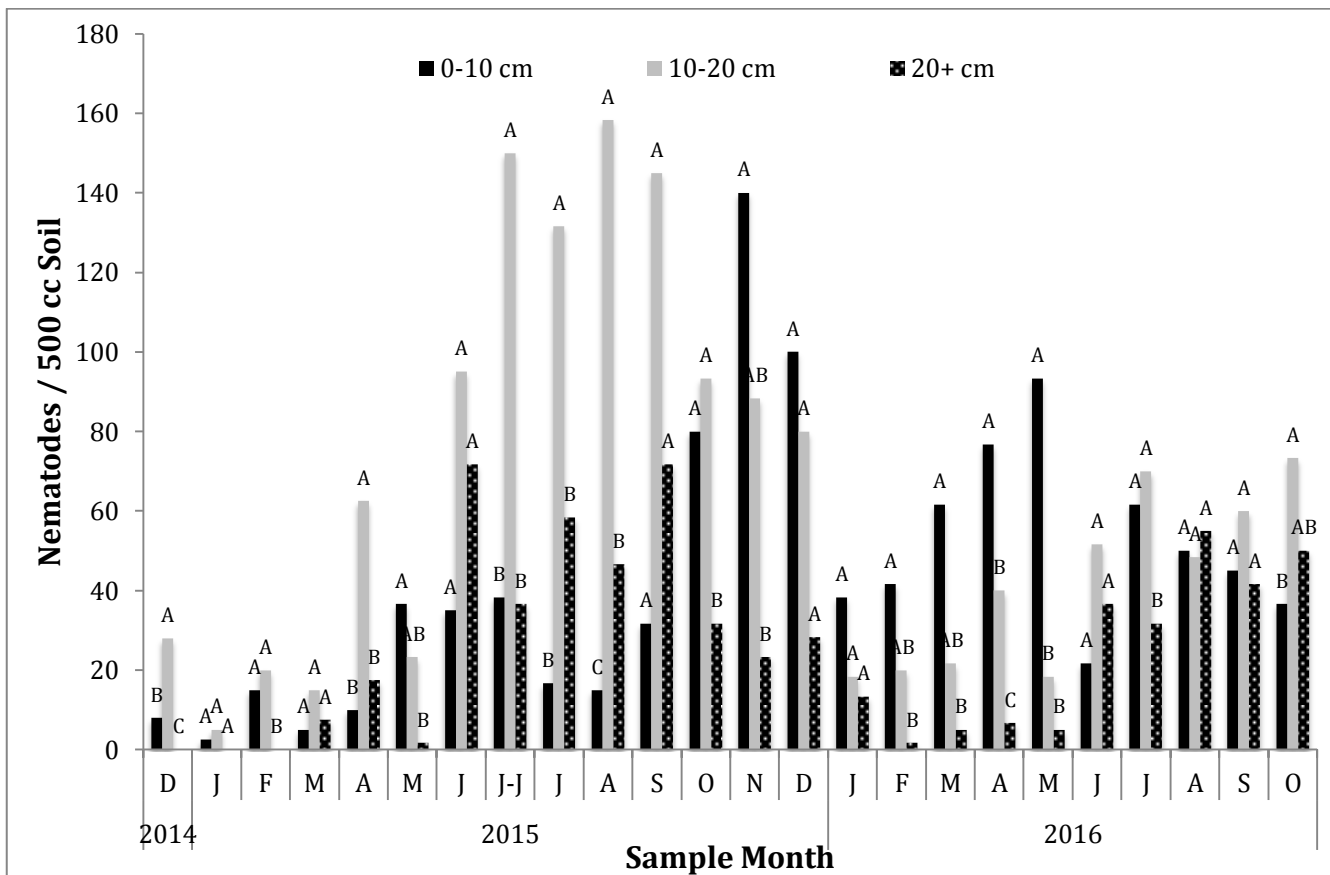


Figure Two. Sting nematode population sampling distribution on creeping bentgrass from Raleigh Golf Association, Raleigh, NC.

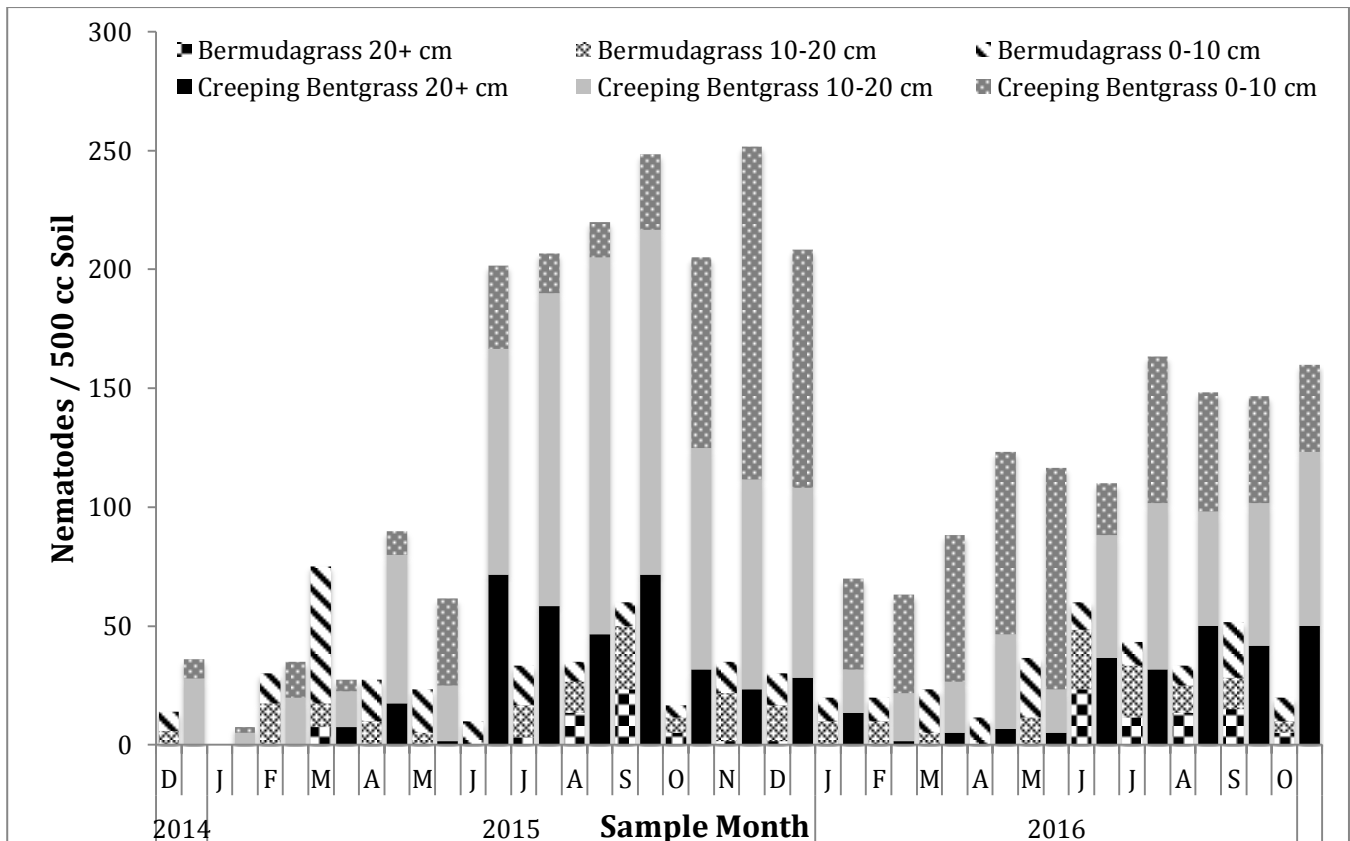


Figure Two. Comparison between creeping bentgrass and bermudagrass population dynamics.