UF/IFAS Turf Field Day and 16th Annual South Florida Turf EXPO

March Event Showcases Turf Research

Research and education programs beneficial to South Florida are part of a statewide program, with turfgrass scientists specialized in entomology, soil and water science, nematology, turfgrass breeding, plant pathology, weed science, and plant physiology. In combination with industry-generated funds, the effort depends on the support of tax revenues, which are allocated by the Florida legislature based on the importance of the turfgrass industry and its positive impact on Florida's economy and environment.

The brief summaries are intended to convey the diversity of what we are doing. This information is not presented to make recommendations for management decisions, including the use of particular products.

The South Florida Turf EXPO is co-sponsored by the South Florida Golf Course Superintendents Association. The EXPO has provided funds used to build and maintain the Otto Schmeisser Research Green.

Van Waddill, Professor and Center Director

I thank my colleagues for their enthusiastic response, and submission of these research summaries. The brief summaries are intended to convey the diversity of what we are doing. This information is not presented to make recommendations for management decisions, including the use of particular products. The information is made available to stimulate discussion and careful observation among turfgrass managers, product manufacturers and representatives, and others interested, regarding turfgrass research.

Philip Busey and Diane L. Johnston, Editors

Nematodes

Alternatives to Nemacur for Nematode Management on Golf Course Turf

William T. Crow

In 2002 12 products were evaluated on FloraDwarf bermudagrass for ability to decrease nematode populations or nematode damage, or increase tolerance to lance (*Hoplolaimus galeatus*) and stubby-root (*Trichodorus proximus*) nematodes. Each product was applied at the maximum rate monthly for six months. The treatments were evaluated for visual performance, nematode populations, and root lengths. Each treatment was compared with untreated and fenamiphos- (Nemacur-) treated plots. Turf and nematode evaluations were made monthly, two weeks after each treatment. Root lengths were measured once, 14 weeks after the initial treatment.

While some treatments had nematode population densities higher or lower than the untreated at one sampling date, there were no overall trends in nematode population reduction with any of the products. Visually, only CMP (an experimental mustard plant based product) and avermectin (a biologically-derived insecticide/nematicide) improved the turf consistently. These two products applied each month were generally as effective as two applications of Nemacur applied three months apart in enhancing turf performance. CMP in particular had consistently high visual performance compared to untreated, and outperformed Nemacur at most data-collection dates. No treatments had significantly greater root lengths than the untreated controls.

In 2003 we will be testing these same products, and perhaps a few additional ones. We will be moving to a site that is infested with sting nematodes as that nematode may be a better indicator species than lance and stubby-root nematodes. We will also be conducting the test on a different bermudagrass cultivar to see if root differences can be better quantified.

This study is funded by a grant from the Florida GCSA, GCSAA and the Bayer Corp.

Relationships between Nematode Damage and Nitrogen Use on Turf

John Eric Luc and William T. Crow

Can nematode management have a positive environmental impact? What if managing nematodes could reduce nitrogen use and nitrate leaching into groundwater? Plant-parasitic nematodes damage turf roots, making the turf less efficient at extracting water and nutrients from soil. To keep nematode-damaged turf looking acceptable often requires additional water and nitrogen . Where does the nitrogen go that is not taken up by the turf? These questions are being explored in the following experiments funded by the FGCSA and GCSAA.

Greenhouse studies are comparing nitrate leaching and nitrogen uptake by turf from sting-nematode-infested and non-infested lysimeters. Field experiments are being conducted on a fairway in north central Florida to quantify nitrogen requirements of nematicide-treated and untreated turf. The experiment will have untreated plots and plots treated with Curfew Soil Fumigant (1,3-dichloropropene). Each of those plots will be divided into four levels of fertility. Tissue nitrogen will be measured every two weeks, followed by a fertility treatment as appropriate. Differences in percent nitrogen, grams of dry matter collected, total nitrogen uptake, and root density will be compared between nematicide-treated and untreated plots.

Nematode management on turf could be linked to reduced nitrogen use and reduced risk of groundwater contamination, which could help stimulate development of new nematode-management strategies and aid the registration of new nematicides for turf.

Can Using Poor Quality Water Actually Help Your Nematode Situation?

Adam C. Hixson and William T. Crow

In many coastal areas in the southeastern United States water restrictions are causing a headache for golf course superintendents, sports turf managers, and homeowners. Seashore paspalum (*Paspalum vaginatum*) has great potential for use in these areas. Because of its tolerance to drought and salinity, use of this grass in coastal areas may aid in conservation of fresh water resources.

Plant-parasitic nematodes are damaging pests of turfgrasses in Florida, with sting (*Belonolaimus longicaudatus*) and lance (*Hoplolaimus galeatus*) nematodes being the most damaging. It is unknown how these or other plant-parasitic nematodes may impact seashore paspalum and how high-salinity irrigation will affect these and other plant parasitic nematode populations. Therefore, a salinity test was performed to examine the effects of high salinity irrigation on *Belonolaimus longicaudatus* and *Hoplolaimus galeatus*.

Treatments consisted of six different rates of salinity used to irrigate the grass on an as-needed basis. The irrigation treatments were formulated by concentrating deionized water to five salinity levels, (5, 10, 25, 40, and 55 ds/M) and deionized water to serve as a control.

This currently ongoing research has tentatively determined that at high salinity concentrations (25 ds/M and above), sting and lance nematode reproduction and feeding significantly decreases. Seashore paspalum has also shown to be susceptible to sting nematodes with a 30% to 40% root reduction when compared to uninoculated pots, but lance nematode data has proven to be inconclusive thus far.

Damage Potential of the Stubby Root Nematode Species *Paratrichodorus minor* and *Trichodorus proximus* on Bermuda and St. Augustine Turfgrasses

Johanna Welch and William T. Crow

Trichodorus proximus and *Paratrichodorus minor* are the most common species of stubby root nematodes found on turfgrasses in Florida. An experiment funded by the Florida Turfgrass Association compared the reproductive rates and root damage caused by these two stubby root nematode species on bermudagrass and St. Augustinegrass.

Twenty pots each of TifEagle bermudagrass and Floratine St. Augustine turfgrass were used for this experiment. Five pots each were inoculated with 400 T. *proximus*, 400 P. *minor*, or 100 *Belonolaimus longicaudatus* (sting nematode), and five pots were uninoculated controls. After inoculation, the plants were left for 100 days in a climate-controlled greenhouse during which all of the plants