

NEMATODES ANYONE? WE GOT THEM...



Posted by Bruce Martin on 23 May 2014

It is late spring, early summer in the Southeast. Birds are chirping, the sun is shining (sometimes) and temperatures are warming. Dollar spot is active when the rains come and leaf wetness periods exceed 12 hours. Bermuda grass and other warm season grasses have broken dormancy, and finally night time temperatures have approached the mid-60's, allowing their growth and recovery from winter. Ahh, life is good!

If you dig some Bermuda grass up at this time you likely will see new white roots growing... but, what's that? Those roots look kind of weird, short and swollen near the root tips. You observe that some of the old roots are not white, but brown and necrotic and really misshapen with multiple, bunched root tips on single roots where normally a single root tip would be formed. In fact, in some of the areas where you see these strange, damaged root systems, you notice voids in the turf sward, with difficult-to-control weed infestations. Maybe the pre-emerge herbicides you applied were no good? Do you have herbicide resistance in the *Poa annua* that is so difficult to control in those areas? And what is that weed? Florida pusley? Virginia buttonweed? Now you remember that last summer that same area was infested with prostrate spurge! What gives? Maybe your dealer sold you fertilizer with no nitrogen; that analysis must be wrong on the fertilizer bag! Heck it was the same guy that sold you that lousy herbicide!

What could it be? You sent in a turf sample and it came back positive for Pythium root rot, but the Pythium fungicides you applied had no effect, and in fact the area looked worse after the weather dried up and the sun came out. The grass just wilted under that sun, and localized dry spots fired up in spite of that expensive soil wetting agent you applied. Could it be nematodes? Really? Naaah... well, ... maybe.

If you live in the southeast and manage fine turf on putting greens you would really be wise to always consider the possibility of nematodes, even though the tendency STILL is for turf managers (and yes, some clinics) to consider them last on their list of possibilities when

Another good source for [Nematode Management for Golf Courses in Florida](#)

diagnosing turf problems. In fact, I believe that nematode problems are increasing on putting greens including bent, bent/Poa (or Poa/bent) and Bermuda grass greens. Why? Well greens are aging, many of our native soils harbor nematodes naturally, and even when green renovations have occurred, **budgets may have been estimated without the cost of methyl bromide or even Basamid to manage contaminating Bermuda grasses**, other weeds, and (yes) nematodes. And, with the conversion of seeded bentgrass greens to vegetatively propagated Bermuda grass, the nematodes can hitch a ride on the planting material (the nematodes are a bargain, no charge for them). All this is happening at a time when our older and relatively effective 'old-school' nematicides are gone from the market and nearly gone from turf pesticide warehouses. In fact, EPA has mandated that NemaCur stocks be used by October 6, 2014; after that date it is considered hazardous waste.

Recently a study was funded with Clemson University and NC State University by the Carolinas Golf Course Superintendents Association through their Rounds for Research grant program. We sampled greens, tees and fairway turf from different regions of both states in the summer of 2012. The results of extensive sampling and identification of plant parasitic nematodes to species were astounding. We detected 24 nematode species belonging to 19 genera and 11 families. Of those, 23 species were found in SC, 19 species in NC, and 18 species were detected in both states. *Helicotylenchus dihystra* (spiral), *Mesocriconema xenoplax* (ring), *Hoplolaimus galeatus* (lance), *Tylenchorhynchus claytoni* (stunt), *Belonolaimus longicaudatus* (Sting), *Meloidogyne graminis* (root knot) and *Paratrichodorus*

Minor (stubby root) were the most prevalent and abundant species in golf course turfgrasses in both states (Figure 1). Twelve species were new records of plant parasitic nematodes in turfgrasses in both NC and SC.

So yes, we have them and the infestations can be very serious limiting factors to the health of the turf and function of the greens, tees and fairways. With the decline and now impending disappearance of NemaCur, alternatives have been studied in both states and in the region for several years. Bayer evaluated and released Nortica, containing the bacterium *Bacillus firmus*, for nematode suppression that has shown efficacy, especially when applied during times of active new root growth. Bayer provides guidelines for optimizing the timing of Nortica applications (<http://www.backedbybayer.com/nortica-nematode-forecast>). **Curfew[®] Soil Fumigant** is available and can provide substantial reductions in many nematode species, especially sting nematode, although it has limitations since it must be applied by licensed contractors, with set-backs from existing structures, and other restrictions (<http://www.dowagro.com/turf/products/insecticides/curfew.htm>). **MultiGuard Protect** (<http://www.multiguardprotect.com/nematicide/label-msds/>) contains the active ingredient 'furfural' which is a plant based by-product from sugar cane which is nematicidal. MultiGuard Protect has been recommended in Florida and is currently being tested in South Carolina.

And, relatively extensive research has been on-going at the University of Florida, Clemson University, and NC State University on Avid 0.15EC Insecticide/Miticide for use on golf greens

under 24C (Special Local Need) labels in several states, now including Florida and Pennsylvania most recently. Research with Avid has shown improved efficacy when combined or alternated with a soil active fungicide such as Heritage 50WG (figure 2). With Avid, which contains the active ingredient abamectin, it is very important to immediately incorporate the material with sufficient water to the depth of the rootzone (where nematodes feed). The active ingredient has a very high sorption ratio to soil and organic matter particles, which may limit the exposure of the material to nematodes and render it less effective. Generally that means up to ½ inch of irrigation after applications, which translates to about 7 gallons of water per 1000 sq.ft. As a reminder, 24C labels are specific to the registrant, so Avid 0.15EC is the ONLY legal formulation of abamectin available for nematode control in turf at this time, and only in states with the approved 24C labels.

There are other materials being tested in recent years that hold promise for nematode control in turf, and several hold promise, showing decent effectiveness in trials. So I think the future is not that bleak at least as far as putting greens are concerned. It is taking different strategies to manage the nematodes, generally translating to more frequent applications, rotations to several active materials, incorporation of broad spectrum soil active fungicides, such as Heritage, etc. And, a pro-active approach aimed more at protecting new root growth that occurs in spring and fall and relying less on obtaining a body count of dead nematodes with these products. Most of these materials will kill nematodes either directly (toxicity) or indirectly (preventing feeding) but effects are transient and as roots recover and surviving nematodes continue to feed, damage can continue. However, if suppressed sufficiently to promote root growth, it may be enough for turf to survive and function adequately through summer stress periods. Even so, the attention of skilled managers that are aware of susceptible greens and can continue to ‘baby’ them with light and frequent fertilization, and hand-watering is needed for best success. Awareness comes with good diagnostics and continued monitoring of root growth and function, along with use of products that can help when applied at the right time and with the right techniques for best results.

If this means YOU, then good luck this summer.

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