Out Of Sight, Out Of Mind

Everyone is familiar with earthworms, but did you know there are some worms so small they can live inside turfgrass roots?

There are nematodes feeding on cells inside this turfgrass root, but they are not easy to find. Image courtesy of Dr. Robert Wick, University of Massachusetts.

Can you name an animal that has existed for an estimated 1 billion years, has evolved into more than 1 million different species, causes an estimated $77 billion of agricultural damage annually, and frustrates golfers and turf managers? If you answered nematodes, you are right. Nematodes are microscopic round worms that feed on turf and can cause serious damage to golf course playing surfaces.

Nematodes can frustrate turf managers because the damage they cause is difficult to predict and diagnose. Nematodes are invisible to the naked eye and damage from their feeding is not easily differentiated from damage caused by other stresses. It is always more difficult to manage what cannot be easily seen or measured.

Nematodes can also be a very stubborn problem. They are well-adapted to living in irrigated golf course soils, where there is an ample food supply, and they remain active year-round where the soils do not freeze. Some nematode species even have the ability to become nearly dormant when growing conditions become unfavorable, waiting for better

conditions before resuming activity. This survival mechanism allows them to persist through periods of drought and cold temperatures or when food is not available.

Nematodes are almost always present in golf course soils, but that does not mean turf damage is imminent. Not all nematodes negatively affect plant health, and healthy turfgrass plants can tolerate a modest amount of feeding from nematodes. However, plants that are stressed and may already have weak root systems may not readily tolerate nematodes. Profuse nematode feeding reduces root and plant vigor, leaving turf more susceptible to wilt or decline. Golfers may notice a patchy appearance on playing surfaces impacted by nematodes, but they will not be able to see the more extensive below-ground injury that could cause playing conditions to deteriorate.

Golf courses with a history of nematode injury should monitor nematode populations throughout the season. This is done by collecting soil or turf samples from historically affected areas or by sampling specific areas where nematode activity is suspected. A diagnostic laboratory will remove any nematodes from the samples and provide management recommendations based on the type and amount of nematodes present. Implementing cultural practices that maximize root growth and minimize plant stress – e.g., raising the mowing height – can mitigate nematode damage, but sometimes nematicides may be required to reduce harmful nematode populations.

Nematodes probably do not receive the attention they deserve in many parts of the country. Perhaps that is because their activity is not easily identified, nor their impact immediate. They are a quiet and subversive force that is capable of seriously disrupting golf course playing conditions in certain situations. Nematodes may be out of sight, but hopefully they are not out of mind.