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The Effect of Root-Knot Nematodes on 'Gold Mound' Duranta

Introduction

The genus *Duranta* includes approximately 17 species of shrubs and trees from tropical and subtropical America. *Duranta erecta*, previously identified as *D. repens*, is the most cultivated *Duranta* in Florida. Though it is often described as a Florida native, there is no wild population in the United States.

Duranta erecta 'Gold Mound' has become the most widely sold of all the *Duranta* cultivars. It is commonly used in both commercial and home landscapes as well as in municipal projects. 'Gold Mound' is grown as a border or low hedge shrub and increasingly as a specimen plant. Its yellow leaves makes it a good contrast amid the green of other foliage in the landscape.

Nematodes

Nematodes are unsegmented roundworms. Most nematodes are beneficial and feed on bacteria and fungi in the soil. Unfortunately, there is another group of nematodes that feeds on plants, called plant-parasitic nematodes. This group of nematodes is very small and most can only be seen by using a microscope. All plant-parasitic nematode have a stylet or mouth-spear. The nematode uses its stylet to puncture plant cells and then inject digestive juices through it. Most of the plant-parasitic nematodes that are important on ornamental plants in Florida feed on roots.

Root-Knot Nematodes

Root-knot nematodes (*Meloidogyne* spp.) are sedentary endoparasites that establish permanent feeding sites inside the roots. Root-knot nematodes inject hormones into the roots that cause knots or galls to form. These galls are the only nematode symptoms that are easily recognized. The damage and change to the root system is extensive, also allowing fungi and bacteria to get into the plant.

The damage reduces the ability of the plant to obtain water and nutrients from the soil. When nematode numbers get high, and/or when environmental stresses occur, aboveground symptoms many become evident. Aboveground nematode symptoms often resemble nutrient deficiencies or drought stress. Symptoms include yellowing, wilting, thinning or dying.

Affects on 'Gold Mound' Duranta

In the winter of 2012-2013, there were frequent reports of 'Gold Mound' *Duranta* dying particularly in central Lee County and Cape Coral. The affected plants were most frequently associated with mass plantings of the cultivar in both home and HOA landscapes. Damage to plants were localized areas within a planting block, enlarging to affect other 'Gold Mound' plants over time. Many affected plants were surrounded by apparently healthy plants. The most severely damaged plants were leafless with dried stems. Root samples of several plants were sent to the University of Florida nematode assay laboratory in Gainesville. The results confirmed the presence of root-knot nematodes in sufficiently large populations to cause severe damage to the plants. The above ground symptoms of the sampled plants correlated with the results.

Management

When purchasing Gold Mound, or any other plant, it is advisable to inspect the root system for root-knot nematode galls or other root problems before planting. Do not use plants with galled roots. To prevent spread of nematodes it is best if severely damaged plants and plantings be replaced with less susceptible plants and not with Gold Mound. Shovels and other equipment used around infested plants should be cleaned thoroughly before using in other areas.

Currently, there are no chemical nematicides labeled for use on ornamental plants in landscapes that are proven effective in University of Florida research trials. Current research indicates that a bionematicide product Melocon WG, which contains a fungus that parasitizes root-knot nematode eggs, may suppress numbers of root-knot nematodes on ornamental plants. However, because the research is ongoing, we do not yet know how consistent this product is. We also do not yet know how successful it will be at “fixing” a severely damaged plant. Melocon WG is labeled as a soil-directed spray for ornamentals. Our research indicates that it works best when tank-mixed with a soil wetting agent and irrigated immediately after application to move the fungus spores into the soil.



Typical use of 'Gold Mound' Duranta. The plants here were apparently not affected by root-knot nematodes.



Affected plants in a roadway media



Affected plants boarding a golf course



Affected plants in a home landscape. Notice the affected plants are surrounded by healthy ones



Roots of landscape affected plants



Roots of landscape affected plants

References

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All pictures taken by Stephen H. Brown

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