

The Guava Root-Knot Nematode (*Meloidogyne enterlobii*), a Potential Threat to Arkansas Sweet Potatoes and Other Crops

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The guava root-knot nematode, *Meloidogyne enterlobii*, was originally identified in China in 1983. Over the next 20 years this nematode was reported from several African, Asian, South and Central American countries, and in 2001 it was first reported in the continental U.S. in Florida. Since that time the guava nematode has been reported in several regions along the Atlantic coast in North and South Carolina.

Because of the damage it can cause to the roots of susceptible host plants, *M. enterlobii* is considered a major economic pest of many horticultural and agronomic crops. It is particularly problematic because this nematode can reproduce on and damage crop cultivars that are considered resistant to other root-knot nematode species. Examples of outright crop failures have been documented due to the guava root-knot nematode, particularly in crops like sweet potato that depend on quality as well as yield for success. Other susceptible crops of interest to Arkansas growers include

soybean, cotton, many cucurbit vegetables (cucumber, squash), tomato, pepper, eggplant, Irish potato and southern peas.

Very recently, the guava root-knot nematode was introduced accidentally into northeastern Louisiana near the Chicot County border on sweet potato roots from North Carolina. Significant steps have been taken to eradicate this nematode in the one field where it was introduced, but the potential for its survival is a concern. More importantly, this introduction illustrates just how easily non-native pests can move from one point to another.

The guava root-knot nematode reproduces at a very high rate and can go from low levels to severe infestations in only a year or two. *M. enterlobii* causes very large galls on the tubers of sweet potato which are easily seen with the unaided eye if infection rates are high. The damage done is considerably more severe than would be expected from the southern root-knot nematode, *Meloidogyne incognita*, that is widely distributed in the state (Figure 1).



Figure 1. Pimples (galls) caused by the guava root-knot nematode (left) and by the southern root-knot nematode (right). Photos courtesy of Charles Overstreet, Louisiana State University.

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A danger, however, with either of these nematodes is low tuber infection rates that may go unnoticed.

The guava root-knot nematode life cycle is very similar to that of the southern root-knot and other *Meloidogyne* species. Immature (juvenile) nematodes hatch from eggs in roots or tubers and migrate in the soil to roots of susceptible hosts. The nematodes penetrate these roots and set up a permanent feeding site where they develop to adult females. As with other root-knot nematodes, the developing females cause root tissue to swell, producing galls or pimples on roots and tubers (Figure 2).



Figure 2. Mature females of the guava root-knot nematode embedded in a sweet potato tuber. Photo courtesy of Charles Overstreet, Louisiana State University.

During warm weather, each female can produce approximately 500 eggs within about a month. Once these eggs hatch, the cycle is continued. The nematodes survive the winter primarily as eggs attached to females either on roots in the soil or in tubers. Infested soil, sweet potato tubers, slips and ornamental plants are also potential ways for nematodes to spread to new areas.

At this time, the guava root-knot nematode is not known to be present in Arkansas. However, awareness among Arkansas farmers and crop advisors of the potential of *M. enterlobii* to be introduced into the state is important in recognizing potential areas where *M. enterlobii* may exist. In addition to seeing obvious symptoms on roots or tubers, one of the best ways for producers or gardeners to recognize that the guava root-knot nematode may be present is noting severe damage on crop cultivars that are resistant to the southern root-knot nematode. If the guava root-knot nematode is suspected, soil and/or root or tuber samples can be submitted directly to the Arkansas Nematode Diagnostic Laboratory at 362 Highway 174 N., Hope, AR 71801, or through your local county agricultural agent.

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