EVALUATION OF PEACH ROOTSTOCKS FOR MANAGEMENT OF ROOT-LESION NEMATODE IN THE SOUTHEAST

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Root-lesion nematodes *(Pratylenchus* spp.) are an important pest of peach in the U.S. and in other regions of the world. At least nine species of root-lesion nematode have been found associated with stone fruits throughout the world.

Pratylenchus vulnus is considered the most economically important root-lesion nematode on stone fruits in California. Damage by this nematode to plum and peach rootstocks is estimated to cause 16% reduction in marketable fruit (reduction in fruit size and yield), with peach rootstocks being more affected than plum. In the late 1960's, *P. vulnus* was associated with reduced peach tree vigor in Georgia, but has generally been considered inconsequential throughout the Southeast and therefore ignored as a major nematode pest on peach.

Pratylenchus spp. are migratory endoparasites that enter and move inter- and intracellularly while feeding on root cells where they cause extensive damage. The presence of *Pratylenchus* spp. in stone fruit orchards can affect tree establishment, orchard uniformity, and ultimately fruit production. Above-ground symptoms can include tree decline with general characteristics of nutrient deficiency, reduced shoot growth and general tree vigor, and a reduction in fruit size. Generally, below-ground symptoms include a reduction in number of feeder roots, darkening of roots, and necrotic lesions.

Preplant soil fumigation of a recommended nematicide (e.g., methyl bromide or 1,3-D) provide the best management against *Pratylenchus* spp. involved in replant diseases of stone fruits. However, with the pending loss of methyl bromide, alternatives to conventional nematicide application continue to be investigated (i.e., rootstock resistance).

Generally, resistance to *P. vulnus* is not available in commercial peach rootstocks, although a few wild *Prunus* clones have been shown to be resistant. Tolerance to *P. vulnus* has been reported in the plum rootstocks Marianna 2624, Myrobalan 29C, and Bruce. In the Southeast, Lovell peach rootstock is recommended over Nemaguard (root-knot nematode resistant) because trees have a higher survival rate on peach-tree-short-life (PTSL) sites, even though Lovell is susceptible to root-knot nematode. Finding a rootstock superior to Lovell that survives on PTSL sites and is root-knot and root-lesion nematode resistant would be of great value to this peach industry.

As reported previously, Guardian rootstock was identified as i) providing greater tree survival than Lovell on PTSL sites (MBAO Meeting, 1995) and ii) having resistance to

some root-knot nematode isolates [i.e., *Meloidogyne incognita* (GA-peach isolate) and *M. javanica* (NC-tobacco isolate)] (MBAO Meeting, 1996), but not all [i.e., *M. javanica* (CA-isolate) & *Meloidogyne* sp (FL-isolate)] (MBAO Meeting, 1999). However, susceptibility of Guardian peach rootstock to the root-lesion nematode is unknown.

A shade house study was initiated to evaluate how broad and effective Guardian's resistance is against *P. vulnus* (GA-isolate) as compared to the peach rootstocks of Lovell and Nemaguard. Criteria used in evaluating Guardian resistance 29 months after inoculation in outdoor microplots included i)fresh root and shoot weights, ii) trunk diameter, and iii) nematode reproduction. Results indicate that plant growth of all three rootstocks was significantly lower when grown in soil infested with *P. vulnus* than in the uninoculated soil. Differences in number of *P. vulnus* per gram of dry root were detected among the three rootstocks. Guardian trees supported greater numbers of root-lesion nematodes per gram dry root than Nemaguard, but neither rootstock differed from Lovell.

In summary, Guardian rootstock is susceptible to the *P. vulnus* population used in this study. Based on these findings, implementation of Guardian as an alternative management strategy to chemical control of root-lesion nematode would not be feasible at this time. Furthermore, this nematode should not be ignored as a pest on peach in the Southeast.