USE OF ENTOMOPATHOGENIC NEMATODES FOR SUPPRESSING RING NEMATODE ON PEACH AND PECAN

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Applications of entomopathogenic nematodes *Steinernema carpocapsae, S. feltiae, S. glaseri*, S. *riobrave* or *Heterorhabditis bacteriophora* have been reported to reduce plant-parasitic nematode populations in roots and soil. Of particular interest is an investigation, which reported the suppression of a ring nematode species (*Mesocriconema* sp) by S. *riobrave* on turf. The effectiveness of different entomopathogenic nematodes on *M. xenoplax* population density has not been tested.

The ring nematode, *Mesocriconema xenoplax*, causes peach trees to be more susceptible to peach tree short life disease (PTSL), specifically cold injury and/or bacterial canker (*Pseudomonas syringae*), and is widespread throughout the major peach producing areas of Georgia and South Carolina. Tree losses due to this nematode-associated disease has generated a growing awareness that suitable alternatives to presently registered nematicides have not been developed for peach and need to be explored. *Mesocriconema xenoplax* has also been found associated with pecan trees in South Africa. Recently, *M. xenoplax* was found in association with stressed and stunted pecan trees in Georgia (Nyczepir, unpublished). The contribution of *M. xenoplax* in stressing pecan trees remains to be determined.

In recent years nematode management research has focused on alternatives to conventional nematicide applications such as rootstock resistance, rotation crops, biological control, and ground covers. Emphasis on nonchemical control is partly due to apprehension about the environmental problems associated with soil fumigation with methyl bromide. As a result of its role in ozone depletion, a ban on the importation and manufacture of methyl bromide in the United States is scheduled for January 1, 2005. Therefore, finding an alternative to chemical control of nematodes that is cost-effective and environmentally safe is necessary. The objective of our research was to determine whether entomopathogenic nematode applications would suppress *M. xenoplax* populations on peach and pecan.

The effect of *Steinernema riobrave* and *Heterorhabditis bacteriophora* on population density of *Mesocriconema xenoplax* in peach was studied in the greenhouse. Twenty-one days after 112 *M. xenoplax* adults and juveniles/1,500 cm^3 soil were added to the soil surface of each pot, 50 infective juveniles/cm^2 soil

surface of either *S. riobrave* or *H. bacteriophora* were applied. Another entomopathogenic nematode application of the same density was administered three months later. The experiment was repeated once. *Mesocriconema xenoplax* populations were not suppressed ($P \leq 0.05$) in the presence of either *S. riobrave* or *H. bacteriophora* 180 days following ring nematode inoculation. On pecan, 200 *S. riobrave* infective stage juveniles/cm^2 were applied to the soil surface of 2-year-old established *M. xenoplax* populations in field microplots. Additional applications of *S. riobrave* were administered two and four months later. This study was terminated 150 days following the initial application of *S. riobrave.* Populations of *M. xenoplax* were not suppressed in the presence of *S. riobrave.*

Based on our studies, the use of live inundative applications of *S. riobrave* or *H. bacteriophora* did not provide a meaningful management strategy for *M. xenoplax* on peach or pecan.