

# Testing rootstocks of perennial crops for resistance to *Meloidogyne floridensis* a new species in California

Andreas Westphal, UC Riverside

## Project Summary/Abstract

*Briefly describe the long-term objectives for achieving the stated goals of the project.*

Rootstocks resistant to root-knot nematodes are important protections against these soil-dwelling parasites. Foremost, the high level of resistance to southern root-knot nematodes in peach rootstock 'Nemaguard' has protected plantings of Prunus crops including almonds and stone fruit. This durable resistance has been effective for decades. Further retrogression, some in crosses with almond, has broadened this resistance utility. Recently, *Meloidogyne floridensis*, the peach root-knot nematode (PRKN) was first described from California almond orchards (Westphal et al., 2019). This nematode species has been damaging Prunus plantings in Florida >10-20 years. It can overcome currently deployed resistance against root-knot nematodes. Namely, it was found to damage 'Nemaguard', 'Hansen536', 'Bright's 5'. The problem is foremost recognized in Prunus, but root-knot nematodes typically have wide host ranges, and it is important to know if other perennial crops could be infected by PRKN. For example, there is no published record of what the host status of grape is. Similarly, walnut and pistachio are only poorly characterized. It is the objective of this project to determine the principal host status of Prunus, and Pistacia, and Vitis. Such information will be crucial to determine what crops potentially suffer from infections by this nematode, and will direct breeding efforts of crops at risk.

## Scope of Work

*Describe the goals and specific objectives of the proposed project and summarize the expected outcomes. If applicable, describe the overall strategy, methodology, and analyses to be used. Include how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate. Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the goals and objectives.*

Until further notice on the quarantine status of *Meloidogyne floridensis* the containment facility at the UCR campus will be used for greenhouse experimentation. In two trials (one started in spring, one in the fall), a total of 2.0 genotypes (three of each *Prunus*, *Juglans*, *Pistacia* and *Vitis* plus eight *Prunus* breeding lines) will be planted in replicate pots, and inoculated with juvenile suspensions of *M. floridensis*. After about 1/2 year of incubation, the plants will be uprooted, and rated for galling. After staining, the egg masses will be counted. Both parameters will be used to assess the host status. Absence of both indication of nematode infection will indicate resistance. This information will then be used to categorize the different plants.