Current Research Objectives

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Research topic: Effect of a soil bacterium on biological control of Diaprepes root weevil by a naturally occurring entomopathogenic nematode.

Primary Research Objective(s): Determine whether soil pH management can conserve the biological control services of a nematode that regulates *Diaprepes abbreviatus* (Diaprepes root weevil).

Research Goal: Understanding if a *Paenibacillus* sp. that is a phoretic parasite of the entomopathogenic nematode *Steinernema diaprepesi* regulates the nematode efficacy against root weevils in nature.

Outcomes to date: We demonstrated in surveys during two years in three citrus groves that population flux of the bacterium/nematode pair conforms to classical predator-prey dynamics, indicating that the bacterium regularly interferes with biological control of Diaprepes root weevil. We showed in the surveys, and in controlled laboratory and field experiments, that the bacterium affects the nematode more as soil pH increases because spores will not adhere to the nematode at low pH. Due to an intensive outreach program, growers are aware that reducing soil pH provides multiple benefits including increased tolerance to HLB, reduced population growth of the citrus nematode, and increased biological control of Diaprepes roots weevil.

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