



Diaprepes root weevil

# Dealing with diaprepes root weevil



By Ajjia Paolillo

**M**anaging root weevils in the grove is essential for root health and overall tree health. The most concerning root weevil for citrus growers is *Diaprepes abbreviatus*. Diaprepes larval feeding causes significant injury and damage to citrus root systems.

### LIFE CYCLE AND FEEDING

Let's begin with the life cycle stages of the diaprepes. Adults emerge from the soil and relocate to the tree canopy, where they cause damage by feeding on the leaves. There, they also lay eggs on the leaves. Once the eggs hatch, the neonate larvae fall to the ground and begin working their way into the soil. Once in the soil, they move toward the citrus tree roots and begin feeding.

Diaprepes larvae feed on roots throughout the year. As the neonate larvae grow larger, they feed on different parts of the root system. The neonates feed on the smaller fibrous roots, while the older larvae feed on the structural roots. Neonate feeding destroys the fibrous roots, which are essential for nutrient and water uptake.

The larger larvae feed on the bark and cambium of the structural roots, where they cause deep grooves resulting in open wounds and girdling. These wounds leave the roots vulnerable for infection by *Phytophthora* spp. to enter the tissue, causing root and crown rot and leading to further damage and even tree death. The larvae then pupate and grow into adults, which emerge from the soil, and the cycle starts over.

### CONTROL MEASURES AND MONITORING

Control measures for diaprepes should be applied to the tree canopy using foliar sprays at the peak emergence of adults from the soil. Peak emergence of adults from the soil is usually around late May to early June. By targeting this peak emergence, the number of reproducing adults can be reduced, thereby decreasing the number of eggs deposited on the leaves and reducing larvae that enter the soil. There can also be a second peak of adults in late August to mid-October.

The use of ground traps, such as a Tedders trap, is effective for monitoring the adult numbers in the tree canopy.

*Control of the larvae once in the soil can be achieved by using biological control of parasitic nematodes.*

Foliar sprays of contact insecticides plus oil can kill adults and eggs in the canopy. Research studies have shown that two spray applications timed at four weeks apart in late May through June, which correspond with the summer flush, help to reduce the root injuries. It is recommended to include an

egg sterilant in the last application. The addition of the egg sterilant will cause any eggs that come in contact with the leaf to not be viable, and females will lay sterile eggs.

Controlling the neonates as they fall to the soil involves using a chemical barrier under the tree in early July. The chemical barrier is applied to the soil and will kill the neonate larvae as they pass through the soil surface before reaching the roots of the tree.

Photo by Tonya Weeks, UF/IFAS

The chemical barrier is applied from the trunk of mature trees up to the dripline on bare soil using an herbicide applicator. This management practice is also recommended for young trees and resets. The barrier should be applied from the trunk out to the furthest extent of the foliage. It is best to keep the soil undisturbed after the application to keep that barrier in place.

Another option for controlling neonates as they fall to the ground is the use of landscape fabric as a physical barrier to restrict neonate contact with the soil. A suitable fabric will allow water from irrigation and rain to pass through to the soil and not runoff. The fabric also can aid in weed suppression and help to increase tree and root growth.

Control of the larvae once in the soil can be achieved by using biological control of parasitic nematodes. These nematodes are sold as biopesticides and can be applied using microirrigation or a modified herbicide applicator.

Peak populations of larvae in the soil occur mid-July through September, so it is recommended to apply nematodes one or more times during this period. Soil temperatures should be above 70 degrees and have adequate moisture either from rain or irrigation. Avoid making applications during sunny days or high temperatures, when the nematodes can be exposed to UV rays and heat.

If a nematicide has been applied to the grove, wait at least four weeks before applying parasitic nematodes for larval control. Larval control using nematodes is most effective on sandy soils with a courser texture. It may be necessary to also apply a fungicide to help control *Phytophthora* spp. This will depend on soil type, adult and larval populations, and rootstock susceptibility to *Phytophthora* spp. 🍊

**Source:** 2021–2022 Florida Citrus Production Guide: Citrus Root Weevils, by Larry W. Duncan and Catharine Mannion, edis.ifas.ufl.edu/publication/CG006

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