

A NEW EXOTIC PEST FOUND IN TEXAS

Diaprepes Root Weevil

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Introduction

Another pest insect not native to the United States has found its way to Texas. The Diaprepes root weevil, *Diaprepes abbreviatus* (Coleoptera: Curculionidae), native to the Caribbean region, was accidentally introduced into Florida in 1964, apparently from ornamental nursery stock shipped from Puerto Rico. Since then this weevil has spread over a large area of central and southern Florida where it is damaging to citrus, ornamental plants, and some other crops. It has now spread to Texas, California, and Louisiana.

Where are these weevils found?

In 2000, Diaprepes became established in a mature citrus grove in the Rio Grande Valley of Texas (Hidalgo and Cameron counties). In addition the weevil was found in Nueces County (Corpus Christi) in 2005 and 2007 and at two locations in the Houston area (Harris County) in 2010. The Texas Department of Agriculture has quarantined the infested areas in Hidalgo, Cameron, and Harris counties. In 2005 and 2006, this root weevil was found infesting ornamentals and lemon groves in southern California. *D. abbreviatus* was found in Plaquemines Parish, Louisiana (southeast of New Orleans), in 2008. The initial find in LA consisted of two pairs of mating adults on the vegetation of trees. Then in July 2009 a large flush of adults was reported. In Florida, it is estimated the weevil now infests more than 100,000 acres of citrus and is established in at least 23 FL counties.

What does the Diaprepes root weevil feed on?

The Diaprepes root weevil is a relatively large, attractive weevil about 1/2-inch long having color variations that range from black with gray, to yellow or orange (Figure 1, 2, 3, 4). The host list for this pest weevil is huge; it is reported to feed on more than 270 plant species from 59 families. Some of the more common host plants include citrus (all varieties), corn, sorghum, sweet potato, sugarcane, and Brazilian peppertree. Interestingly, Brazilian peppertree, itself an exotic invasive plant, has become a problem in areas along the Texas coast. Because of its broad range of host plants, this weevil poses a significant threat to the citrus and ornamental plant industries. The good news for forestry in East Texas is that pine is not on the host list!

Life cycle

The average life span of an adult Diaprepes root weevil is about 4-5 months, during which time the female weevil will lay about 5,000 eggs. Eggs typically are laid in clusters containing anywhere from 30 to 260 eggs. Eggs are usually laid between two leaves or inside the folded edge of a leaf, and hatch in 7-10 days. Young larvae drop to the ground where they then burrow into the soil to find plant roots on which to feed. It may take as long as 15 months (depending on moisture and temperature) for larvae to develop and full grown larvae can be an inch long (Figure 5). Larval feeding can girdle the root collar causing the plant to die. Mature larvae pupate in the soil and emerge as adults 2-4 weeks later. Young larvae cannot burrow

into dry soil and adult weevils will not emerge from soil that is dry and compacted. Moisture (irrigation or rainfall) will promote adult emergence. Mating takes place on the leaves of host plants and females will begin laying eggs within one to two weeks of emergence. The entire life cycle (egg, larva, pupa, adult) of the Diaprepes root weevil ranges from 5-18 months, depending on temperature and soil moisture, and most adults emerge in spring and early summer. Natural dispersal of the weevil is slow, but human movement of infested plants has been responsible for most of the spread of this insect into Florida and then to other states.

Feeding damage

Adult weevils feed on the edges of leaves and create characteristic semicircular notches (Figure 2). Readers should be aware that other insect feeding may leave similar symptoms. The weevils tend to avoid feeding on older leaves and prefer to feed early in the morning and late in the day. They often rest and hide in the foliage during the day. However, it is the larvae that cause most of the damage by feeding on plant roots. Citrus trees typically don't begin to show decline symptoms until the root system has been mostly destroyed. Root damage also makes the plants susceptible to various fungi. The weevils seldom feed on the fruit.

How to look for Diaprepes root weevil

Careful inspection of plants is needed to detect the presence of Diaprepes. Look for the circular feeding notches along the edge of leaves as well as the adult weevils. If adults are present, they can easily be collected by holding an inverted umbrella or paper bag under the foliage and vigorously shaking the foliage. Another method would be to place a light colored cloth on the ground below the plant and shake the foliage. Finding larvae requires some work, but if they are present, they can be found by sifting soil from beneath plants where evidence of foliar feeding is seen. Finally, if eggs are present, they can be found between folded or "stuck together" leaves. All weevils go through four life stages – egg, larva, pupa, adult – a process called complete metamorphosis. Finding adult weevils and evidence of their feeding are the two easiest ways to determine the presence of this pest.

If you see the adult weevils or have damage to plants you suspect is caused by the weevil, please contact Joe Pase (jpase@tfs.tamu.edu). If you collect a suspected adult Diaprepes root weevil, place the weevil in a small vial of rubbing alcohol and send it to Joe Pase at the address at the end of this article.



Figure 1. Size and color variation of Diaprepes root weevil. Photo from: http://www.cdfa.ca.gov/phpps/PDEP/factsheets/43617_HaveYouSeenThisInsect.pdf.



Figure 2. Adult *Diaprepes* root weevil. Photo by Keith Weller, USDA Agricultural Research Service, Bugwood.org.

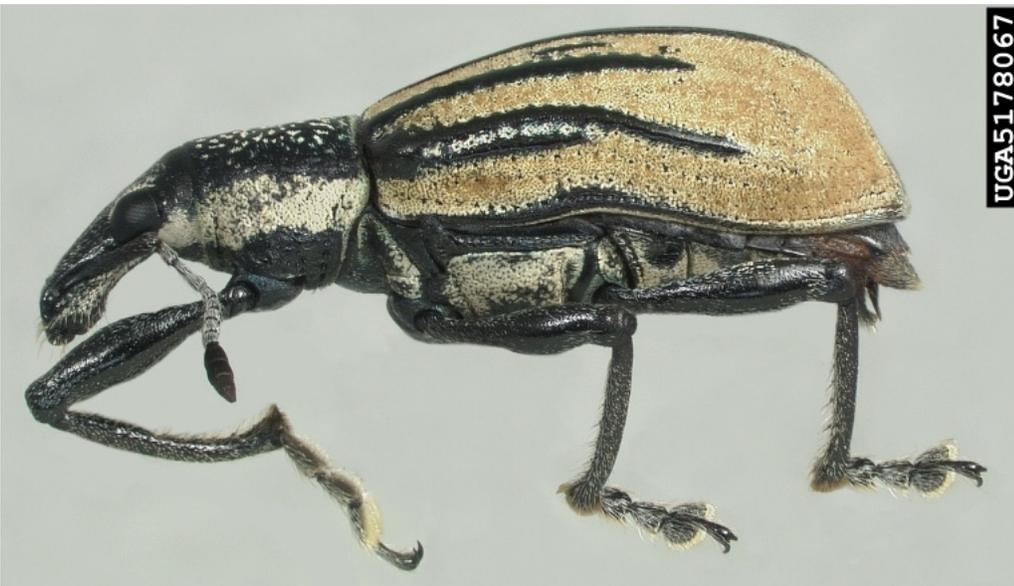


Figure 3. Adult *Diaprepes* root weevil. Natasha Wright, Florida Department of Agriculture and Consumer Services, Bugwood.org.



Figure 4. Diaprepes root weevil larvae – mature left; young right.
Peggy Greb, USDA Agricultural Research Service, Bugwood.org.

Please send any adult weevils suspected to be the Diaprepes root weevil to Joe Pase. Place the weevils in household rubbing alcohol in a small vial and mail it to:

Joe Pase
Texas Forest Service
P. O. Box 310
Lufkin, TX 75902

OR

Joe Pase
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2127 South First Street
Lufkin, TX 75901

Information in this article about Diaprepes root weevil was adopted from the following sources:

1. Texas quarantine information from: EMERGENCY RULES, 35 TexReg 2102, March 12, 2010, Texas Register.
2. Weevil biology and other information from: <http://ucanr.org/freepubs/docs/8131.pdf>

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