

### PHYTOPHTHORA ROOT ROT



Healthy roots



Damaged roots



Root damage impairs the water and nutrient uptake



Root damage can deplete stored carbohydrate

**SCIENTIFIC NAME:** *Phytophthora nicotianae* or *P. palmivora* in wet soil

**SYMPTOMS:** Soft, water soaked root cortex; cortex sloughs off (comes off to touch) to leave thread-like tips; little to no water or nutrient uptake leading to wilting; mature trees difficult to diagnose; reduced fruit size and/or number; leaf loss; twig dieback; reduced yield over several years.

**RESIDENTIAL MANAGEMENT:** resistant rootstocks like Swingle or trifoliolate oranges; plant bud union above soil; do not overwater; *Diaprepes* control.

### DIAPREPES ROOT WEEVIL



Adult weevil is about 3/8 to 3/4 inch



Adult weevil feeds on young leaves causing a notching on the leaf margin



Root girdling by the *P. nicotianae*-*Diaprepes* complex on sour orange (Desoto County)



Leaf notching caused by Diaprepes root weevil

**SCIENTIFIC NAME:** *Diaprepes abbreviatus*

**SYMPTOMS:** Adults cause leaf notching, but larvae feed on roots; feeding allows the *Phytophthora* spp. to cause root damage.

**RESIDENTIAL MANAGEMENT:** When planting new trees, place landscaping cloth around tree base; adults will have trouble getting into soil and cloth will stop the larvae from emerging.

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## PHYTOPHTHORA FOOT ROT



Yellow veins



Shoot dieback



Damage to trunk



Damage to trunk

**SCIENTIFIC NAME:** *Phytophthora nicotianae*

**INITIAL SYMPTOMS:** Yellow foliage fall/winter and poor growth to shoot dieback.

**TERMINAL SYMPTOMS:** leaf drop; fruit drop; further dieback leading to tree death.

**TRUNK SYMPTOMS:** Bark cracking; gumming; lesions can girdle trunk; found near the crown to below soil line; some healing can occur.

**RESIDENTIAL MANAGEMENT:** Resistant rootstocks like Swingle or trifoliolate oranges, plant bud union above soil; do not overwater; Diaprepes control.

## BROWN ROT



Brown rotted fruit on grove floor



Brown rot on Hamlin orange



Brown rot on grapefruit



Fruit drop caused by brown rot



Fruit drop caused by brown rot

**SCIENTIFIC NAME:** *Phytophthora palmivora*

**SYMPTOMS:** Light brown leathery decay; white fungal growth on surface when humid; infected fruit have strong, sharp smell; can spread in container once fruit is harvested.

**RESIDENTIAL MANAGEMENT:** Remove premature fallen fruit, raise tree skirts; no overhead irrigation; apply preventative sprays of phosphites or copper in late July (if a long rainy season, make a second application in October).