

For more information, contact the University of Florida, IFAS, Citrus Research and Education Center 863-956-1151, www.crec.ifas.ufl.edu, or your local county citrus extension agent

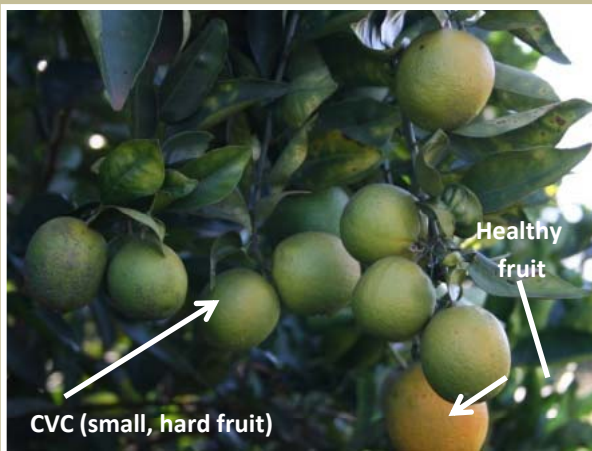
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CVC (upper side of leaf)



CVC (underside of leaf)



CVC (small, hard fruit)

Healthy fruit



Citrus Black Spot (hard spot)



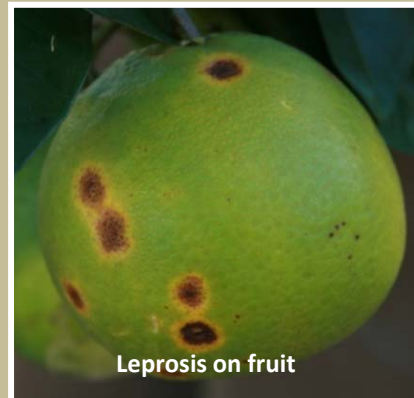
Citrus Black Spot (false melanose)



Citrus Black Spot (virulent spot)



Sweet Orange Scab



Leprosis on fruit



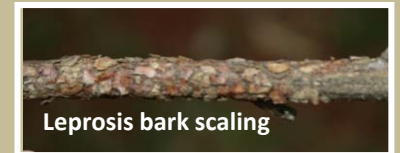
Leprosis (early symptoms)



Leprosis (advanced symptoms)



Leprosis on mature fruit



Leprosis bark scaling



Citrus Tristeza Virus Stem-Pitting

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	CITRUS VARIEGATED CHLOROSIS (CVC)	LEPROSIS	CITRUS BLACK SPOT	SWEET ORANGE SCAB (SOS)	CITRUS TRISTEZA STEM-PITTING (CTV-SP)
Plant Tissue Location	Xylem	Cytoplasm or nucleus of infected cells	Fruit rind and leaves	Fruit rind	Phloem
Spread	Sharpshooters, graft-transmitted, seed (?)	Several species of <i>Brevipalpus</i> mites	Warm wet conditions, presence of susceptible fruit, and presence of abundant inoculum	Requires moisture; presence of susceptible fruit; splash by raindrops	Several species of aphids, budding and grafting
Pathogen	<i>Xylella fastidiosa</i> (Bacterium)	<i>Citrus leprosis virus</i>	<i>Guignardia citricarpa</i> (Fungus)	<i>Elsinoë australis</i> (Fungus)	<i>Citrus tristeza virus</i>
Tree Symptoms	Reduced vigor and growth; tree not killed, but becomes unproductive; symptoms may appear in one branch or the whole canopy	Symptoms localized on fruit, leaves, or twigs	Extensive fruit drop if severe	Unaffected	Scattered pits after removing bark from affected plants; depressed areas in the bark
Leaf Symptoms	Severe chlorosis, reddish to brown lesions on the lower side corresponding to yellow areas on the upper surface; may resemble zinc deficiency in early stages	Chlorotic at first then may become brown with or without a necrotic center; smooth to touch	Small, round sunken necrotic spots with gray centers (uncommon)	Unaffected	Chlorosis and dieback may occur
Stem/Twig Symptoms	Unaffected	Bark scaling, twig dieback	As on leaves	Unaffected	Twigs are brittle; bark is abnormally thick; trunk and branches may have a ropy appearance
Fruit Symptoms	Small and hard with high acid; fruit remains on the tree; may exhibit sunburn damage; normal color change	Premature fruit drop, flat or depressed lesions with yellow halo; often with brown centers	Necrotic lesions; hard spot, false melanose, and virulent spot type symptoms; does not cause decay; if severe, may cause extensive premature fruit drop	Young fruit have corky, wart-like pustules; tan to gray in color; mature fruit lesions become smoother	Small and misshapen
Flowering	Off-season bloom	Unaffected	Unaffected	Unaffected	Off-season bloom
Varieties Affected	Sweet orange	Mainly sweet orange, mandarins	All citrus, except Tahiti limes	Sweet orange and tangerines	Lime, grapefruit, sweet orange