

LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES



Citrus Canker

Xanthomonas citri subsp. *citri* (synonym *X. axonopodis* pv. *citri*)

Citrus canker is a bacterial disease caused by *Xanthomonas citri* subsp. *citri*. It is thought to have originated in Southeast Asia.

Different strains of the plant disease occur in citrus-growing regions of the world, but the Asiatic strain is considered to be the most severe and widespread form of citrus canker. It is a serious disease of citrus because it causes defoliation, premature fruit drop, blemished fruit and tree decline – and severely infected trees ultimately may stop producing fruit.

The disease was first detected in Florida in 1910. By 1914, it spread to seven Gulf and Atlantic coastal states including Louisiana. Until recently, the disease had not been seen in Louisiana since 1940, however. But it reappeared and was detected in the state on June 28, 2013.

Citrus canker is a highly contagious disease, and all citrus varieties are susceptible – although some varieties are less susceptible than others. Listed from the more susceptible to the less susceptible citrus fruits are grapefruit, trifoliolate oranges, Mexican/Key limes, navel oranges, sour oranges,

sweet oranges, lemons, satsuma oranges, tangerines, Mandarin oranges, king oranges and kumquats.

The bacteria cause symptoms on all above-ground plant parts, including leaves, fruit and twigs. Young expanding tissue is highly prone to infection, and as the tissue becomes mature and hardens off, it becomes less susceptible. Natural infection requires free water on the leaf surface to permit bacterial access through stomates or wounds. The pathogen prefers a temperature range from 68-86 F but is active over a wide temperature range. Lesions appear at about 10 days to two weeks after infection.

Symptoms on leaves and fruit start as tiny raised blisters that expand and become tan to brown as the disease develops. Lesions are visible on both sides of the leaves, with water-soaked margins surrounded by yellow halos (Figures 1 and 2). As a lesion ages, the center becomes raised and corky and can fall out, giving it a shot-hole appearance. The pathogen forms raised, corky craterlike lesions on the fruit (Figures 3 and 4). Those fruit lesions often also have water-soaked margins surrounded



Figure 1. Canker lesions on the tops of leaves, with water-soaked margins surrounded by yellow halos.



Figure 2. Canker lesions on bottom of a leaf. Notice the young lesion with yellow halo and the older lesions with tan to brown margins.



Figure 3. Raised, corky lesions on a sweet orange.



Figure 4. Craterlike lesions on a sweet orange.



Figure 5. Canker lesions on young twig of a sweet orange tree.



Figure 6. Canker on leaf petiole of a sweet orange.

by yellow halos. Similar lesions are present on the twigs and leaf petioles, except the water-soaked margins may be reduced and the yellow halos are absent (Figures 5 and 6). As the disease intensifies, defoliation and twig dieback occur, and severely blemished fruit drop prematurely.

The bacterium enters the host tissue through natural openings (lenticels and stomates) and wounds. It is not carried by insects or other organisms, but the wounds caused by citrus leafminers may serve as infection sites. Bacteria survive in old lesions, and under wet and warm environmental conditions exude from these lesions and disperse short distances through windborne rain, lawnmowers, other landscaping equipment and people carrying the infection on their hands, clothing or equipment. Long-distance dispersal of citrus canker generally is attributed to human movement of infected or exposed citrus material and storms like hurricanes and tornadoes.

Louisiana residents are urged not to move any infected citrus plant material within or out of the state. Louisiana has a state quarantine that prohibits entry of citrus nursery stock from outside the state. Homeowners must buy citrus trees from certified Louisiana nurseries only.

If you believe your citrus trees have symptoms like those shown in this fact sheet about citrus canker, please do not take any samples or transport any part of the plant. Instead, contact the U.S. Department of Agriculture at 225-298-5410 or the Horticulture and Quarantine Division of the Louisiana Department of Agriculture and Forestry at 225-952-8100. More information about citrus canker can be obtained by calling Dr. Raj Singh with the LSU AgCenter at 225-578-4562 or emailing rsingh@agcenter.lsu.edu.

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