



CROP ALERT: A Citrus Canker Fact Sheet for Homeowners¹

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The Pathogen

Citrus canker (CC) is caused by the bacterial pathogen *Xanthomonas axonopodis* pv. *citri*. The pathogen enters host tissues through wounds and natural openings called stomata. It is a serious disease of all citrus and some citrus relatives.

The History

The first introduction of CC in Florida was in 1910 on trifoliolate rootstock from Japan (Schubert *et al.*, 2001). It was spread around the Gulf Coast from Texas north to South Carolina. Quarantine was imposed in 1915, and the disease was declared eradicated in 1933. A second episode occurred in 1986 when CC was found in residential citrus of the Tampa Bay area of west-central Florida. It was later found in nearby commercial citrus groves. This outbreak of CC was officially declared eradicated in 1994 (Schubert *et al.*, 2001).

The most recent outbreak of CC was found in September 1995 on residential citrus near the Miami International Airport in Miami-Dade County. Despite

an ongoing eradication process, it has been spread to more than 10 additional counties.

Fingerprinting of DNA indicate that the current outbreak of CC in the Miami-Dade area spread to southwest Florida as well as west-central Florida. Most likely, spread has occurred through movement of infected citrus over these large distances by humans.

The Symptoms

All aboveground tissues of citrus are susceptible. Citrus canker symptoms appear on the fruit, leaves, and twigs of infected plants (Figures 1-8).

Symptoms on leaves and fruit typically are small, round, blister-like formations called lesions. Lesions usually become apparent about 7 to 14 days after infection under optimal conditions. As lesions on leaves age, they become brown with a water-soaked margin, often surrounded by a yellow halo. The center of the lesion is raised and visible on both sides of the leaves. On fruit, the lesions appear scab-like or corky. Infections may cause severe effects, including defoliation, twig dieback, severely

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blemished fruit, reduced fruit quality, and premature fruit drop.



Figure 1. Small, round, blister-like leaf lesions on leaves with water-soaked margins and yellow halos.



Figure 2. Round, raised blister-like lesions with water-soaked margins.



Figure 3. Raised CC lesions on the underside of citrus leaf and fruit.



Figure 4. Twig lesions and inset of lesions on fruit

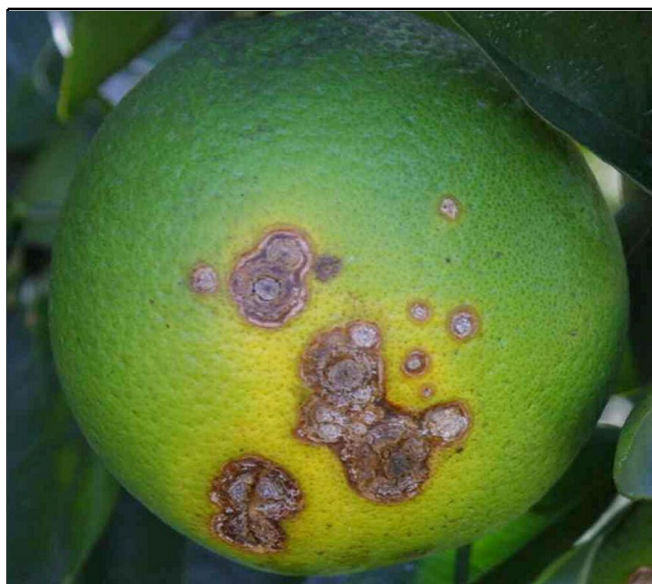


Figure 5. Close-up view of fruit lesions. Water-soaked margin with a yellow halo.



Figure 6. Raised, brown canker lesions on fruit.



Figure 7. Raised, brown canker lesions on leaf.



Figure 8. Severe leaf drop due to CC.

Spread

Citrus canker is a highly contagious disease and spreads rapidly over short distances. Wind-driven rain, overhead irrigation, flooding, insects, birds, and human movement can spread CC. Many of these environmental factors, such as wind and rain, cannot be controlled. However, the spread by humans can be managed by preventing the transportation of infected plant material and by using decontamination procedures. Transport of plant material is the primary means of spreading the canker pathogen over longer distances. All equipment, clothing, vehicles, and tools that come into contact with citrus plants should be decontaminated using an approved disinfectant such as quaternary ammonium. As of April 2000, sanitation procedures were mandatory statewide for commercial businesses including citrus growers, lawn care services, and utility workers in quarantine areas. Violations are punishable by a fine of up to \$5,000 (Schubert *et al*, 2001).

Control Strategies

There is no cure for citrus canker. In areas of the world where CC is endemic, disease management involves the use of resistant varieties, windbreaks to hinder inoculum dispersal, and the timely application of copper-containing bactericides (Schubert and Sun, 1996). These strategies are costly and not completely reliable. Currently, the only management option for CC in Florida is to eradicate the disease.

Eradication involves detection of diseased trees followed by destruction of all diseased and exposed trees within a 1,900-ft radius. Federal and state officials direct the current Citrus Canker Eradication Program (CCEP). Implications for not complying with regulations could result in fines up to \$1,000 for the homeowner. Offenses include transportation of any citrus material into or out of quarantine areas and replanting citrus trees while under quarantine. Losses of residential citrus trees are covered under the State of Florida's canopy replacement program. Homeowners who lose citrus trees from their yards are presently eligible for a \$100 voucher that can be used to buy non-citrus trees, bushes, shrubs, or other garden items (USDA). It is important for all Florida residents to comply with the CC eradication program to stop the spread of CC and keep our citrus trees healthy and canker free.