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Citrus Canker

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Citrus canker, a contagious plant disease caused by the bacterium *Xanthomonas citri* subsp. *citri* (syn. *X. axonopodis* subsp. *citri*), can cause severe damage to all citrus cultivars and some citrus relatives. The disease is not a risk to human or animal health but makes fruit unsightly and unmarketable.

The disease was introduced into the United States from Japan in the early 1900s. Through quarantine and eradication programs initiated by the federal government and states affected by the disease, citrus canker appeared to have been eradicated from Texas by 1947. However, in October 2015, the disease was confirmed in symptomatic lime and lemon trees in Rancho Viejo in Cameron County. In the summer of 2016, the disease was found in Houston (Harris County) and Richmond (Fort Bend County).

Information current as of September 2016.

A quarantine is a tool to isolate, reduce, and eradicate potential disease outbreaks. In February 2016, the Texas Department of Agriculture (TDA) quarantined the area in Cameron County where citrus canker samples from lime and lemon trees originated. The United States Department of Agriculture–Animal and Plant Health Inspection Service (USDA–APHIS) recognized this quarantine in June 2016, meaning that both state and federal citrus canker quarantine rules regulate citrus in this area. Currently, portions of Harris and Fort Bend counties are under TDA quarantines for citrus canker and expected to be soon under USDA–APHIS quarantines.

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Symptoms

The bacterium grows and multiplies in diseased plant parts—all aboveground parts of the citrus tree are susceptible. Citrus canker causes premature leaf and fruit drop, twig dieback, general decline, and blemished fruit (Fig. 1).

Blister-like lesions on leaves and fruit start small and expand as the disease progresses. These lesions may darken to tan or black and develop a water-soaked margin with a yellow halo surrounding it (Fig. 2).

The center of the lesion on leaves as well as on stems and twigs can appear raised and corky or scabby (Fig. 3), surrounded by a water-soaked margin. Mature lesions on older symptomatic leaves may have a shot-hole look (Fig. 2) and these lesions eventually die and fall out.

Environmental Factors

This bacterium thrives in warm, moist conditions and disease development is optimal at 68°F to 86°F (20°F to 30°C). It oozes out from diseased plant parts where there is ample free moisture and easily spreads to cause new infections. The natural transmission mode is through wind and rains that spread the disease over

Figure 1. Canker-affected orange. *Source: Olufemi J. Alabi*

short distances by splashing it onto other plants. Tropical storms or hurricanes can accelerate the range and speed of the disease spread. The primary way citrus canker spreads across locations is that human activities can move infected materials (budwood and fruit) from one place to another. The disease also spreads from tree to tree through mechanical contact with pruning and other equipment.

Control

Since there is no cure for the bacterium, prevention is the best approach to managing citrus canker.

- Exclude the pathogen from areas it is not known to exist by buying plants, budwood, and seedlings only from TDA-certified citrus nurseries.
- Implement TDA regulations before moving citrus materials (including budwood, seedlings, and fruit) within or outside of the state.
- Use good sanitation practices to reduce potential disease spread. Practice general cleanliness and use alcohol-based sanitizers, bleach solution, and antibacterial soap solutions to decontaminate equipment and tools and reduce the risks associated with human and mechanical transmission of the disease.
- If you suspect that a citrus plant has citrus canker, report the tree to TDA at (800) 835-5832 or online at http://www.citrusalert.com/report-a-tree for further assistance.
- Remove and destroy diseased plants to eliminate potential bacteria for future infections.
- Monitor nearby citrus plants. If new infections appear, take action swiftly. TDA regulations require disposal of infected tree and plant material by burning or bagging and burying it at least 2 feet deep at a municipal landfill.

Plant protection chemicals that contain copper can help prevent infection. These products reduce risks but do not stop the disease from occurring or cure affected trees.

- Application timing is critical to provide protection.
- New, growing tissues are the most susceptible to infection.
- Multiple applications may be needed to ensure proper coverage on the plant.
- Proper chemical use and rates are available on the product label. Always read all directions and labels before using any chemical control agent.

Figure 2. Lesions on leaves of an infected lime tree. *Source: Olufemi J. Alabi*

Figure 3. Blister-like lesions on orange leaves. *Source: Olufemi J. Alabi*

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