

Researchers find genetic cause for citrus canker

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Researchers from the Institute of Food and Agricultural Sciences at the University of Florida are closer to finding a possible cure for citrus canker after identifying a gene that makes citrus trees susceptible to the bacterial pathogen.

Citrus canker, which causes pustules on fruit, leaves and twigs, is a highly contagious plant disease and spreads rapidly over short distances. Wind-driven rain, overhead irrigation, flooding and human movement can spread [citrus canker](#). Human transport of infected plants or fruit spreads the canker pathogen over longer distances.

In Florida, the last extensive canker outbreak occurred beginning in 1995, which led to an ultimately unsuccessful eradication program that ended in 2006. That effort cost an estimated \$1 billion and stimulated renewed efforts for more effective and economical controls. Farmers destroyed more than 16.5 million [citrus trees](#) between 1995 and 2012.

Yang Hu, a former doctoral student working with Jeff Jones, a professor in plant pathology, found the critical trait in the bacterium that is necessary for disease development. Hongge Jia, a researcher at UF's Citrus Research and Education Center in Lake Alfred, and Nian Wang, an associate professor in microbiology and cell science also based at the Citrus REC, along with six researchers from three universities worked on the project, as well.

Citrus canker continues to be a problem and exists in most [citrus](#)

-growing areas in Florida. While scientists like Hu are devoted to eradicating the disease, many other researchers are now also battling [citrus greening](#), which threatens to wipe out the \$9 billion industry.

Citrus canker is caused by the bacteria *Xanthomonas citri*. While studying the [bacterial pathogen](#)'s role in infected citrus, researchers were able to identify a gene in citrus critical to the development of citrus canker, known as the susceptibility, or "S" gene.

By finding the susceptibility gene, researchers say they are closer to a cure for the disease.

"The S gene represents an excellent candidate for control measures for the citrus bacterial canker," Hu said.

Hu and Jones said they hope to secure funding to support further research, and have already identified several [genes](#) they believe could be engineered to obtain broad-spectrum plant resistance to most kinds of citrus canker.

"Once you know what the [susceptibility gene](#) is, it's possible to design multiple strategies for disease control," Jones said.

More information: Yang Hu, Junli Zhang, Hongge Jia, Davide Sosso, Ting Li, Wolf B. Frommer, Bing Yang, Frank F. White, Nian Wang, and Jeffrey B. Jones "Lateral organ boundaries 1 is a disease susceptibility gene for citrus bacterial canker disease." *PNAS* 2014 ; published ahead of print January 13, 2014, [DOI: 10.1073/pnas.1313271111](https://doi.org/10.1073/pnas.1313271111)

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