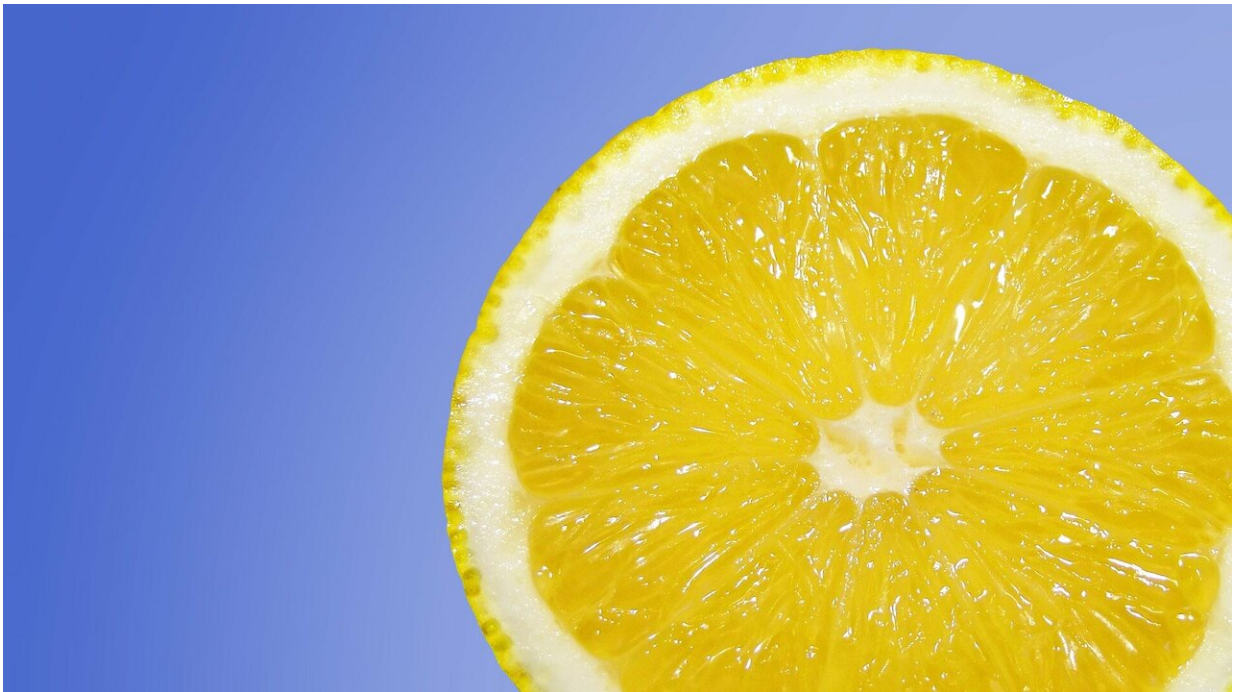


# Lemon trees showed less response to citrus greening disease pathogen than orange trees

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Citrus greening disease was first discovered in Florida in 2005. Since then, production of oranges in the United States for processing has declined by 72 percent between the 2007-2008 growing season and the 2017-2018 growing season, primarily in Florida. The disease was discovered in California in 2012, and now the state is beginning to see a rapid increase of citrus greening disease.

As there is currently no cure for citrus greening disease, many growers are concerned about its rapid spread and many plant pathologists are focused on learning more about the complicated nature of this disease. To add to this growing body of knowledge about citrus greening disease, a group of scientists working in California, New York, and Washington compared the early responses of two [citrus varieties](#), Lisbon lemon and Washington navel orange trees, to infection by *Liberibacter asiaticus*, the pathogen that causes citrus greening disease.

These scientists conducted a comprehensive molecular analysis that showed that Lisbon lemon trees had less of a molecular response to the pathogen than Washington navel orange trees. In part, this might be because leaves of infected lemons tended to accumulate micronutrients, which led to less of an impact on photosynthesis. Additionally, [protease inhibitors](#), important for plant defense, were upregulated in lemons.

"These results may be important for developing varieties of citrus that are more tolerant or perhaps resistant to the HLB pathogen," said Carolyn Slupsky, a UC Davis-based systems biologist involved with the research. "Our research highlights some key features that differentiate more tolerant from more susceptible varieties of citrus and may be used to develop new cultivars that are resistant to the effects of this pathogen."

This study is the first to analyze the impact of the [citrus greening disease](#) pathogen on citrus metabolism prior to symptom development.

"Understanding early response is important," added Slupsky. "As it may also help in developing technologies to detect the disease earlier."

**More information:** Elizabeth L. Chin et al, Multi-omics Comparison Reveals Landscape of Citrus limon and Citrus sinensis Response to 'Candidatus Liberibacter asiaticus', *PhytoFrontiers* (2021). [DOI: 10.1094/PHYTOFR-09-20-0018-R](#)

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