

The battle to save citrus fruits

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Huanglongbing, (HLB), also known as citrus greening, has devastated Florida's citrus farms. Although some growers in China and Brazil have been able to control the problem, California groves are now threatened, according to an article in *Chemical & Engineering News (C&EN)*, the weekly newsmagazine of the American Chemical Society. Chemists and biologists are racing to develop strategies to contain the disease and, hopefully, find an antidote.

Trees infected with HLB develop premature, lopsided green fruits, yellow shoots and mottled leaves, which drastically reduces citrus yield. Originating in China in the early 1900s, the disease is linked to the microbe *Candidatus Liberibacter asiaticus* (CLAs). This bacterium is transferred by the Asian citrus psyllid (*Diaphorina citri*), a flying insect that feeds on the phloem of infected trees and spreads the microbe to other trees. CLAs is not well known because experts are still unable to grow it in the lab for research. Although 90% of the [citrus trees](#) in Florida have been infected, there is still hope for California if [growers](#) and scientists find a remedy fast, freelance reporter Cici Zhang writes.

Researchers are examining different strategies to control the disease, such as creating resistant crops with the gene-editing tool CRISPR, delivering anti-CLAs peptides directly into phloem and using RNA interference to exterminate psyllids. However, with many of these solutions years away, growers need immediate action for existing trees. Chinese growers created the "three axes" approach to HLB prevention, which involves three steps: plant bacteria-free saplings, remove infected trees, and monitor and suppress psyllids. Although the disease still

plagues [citrus groves](#) in China, the percentage of infected trees has decreased. In Brazil, the "10 commandments" for managing HLB encompass the same core ideas of managing trees and pests. Meanwhile, in California, the use of a Pakistani parasitic wasp has been making headway in controlling the psyllid population. Defeating HLB will likely involve a combination of approaches, experts say.

More information: "Citrus greening is killing the world's orange trees. Scientists are racing to help," [cen.acs.org/biological-chemist ... worlds-orange/97/i23](https://cen.acs.org/biological-chemist.../worlds-orange/97/i23)

Provided by American Chemical Society

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