

Citrus greening bacterium may 'ring the dinner bell' to attract insect

March 23 2012, by Tom Nordlie

The bacterium responsible for citrus greening causes infected trees to give off a scent that rings the dinner bell for the disease-carrying insect, University of Florida researchers say.

This finding might distress growers, but it could enable scientists to better monitor the insect and maybe cut the chances healthy trees become infected.

The study was published online March 22 by the journal *PLoS Pathogens*.

Greening-infected [citrus trees](#) emit a fragrant chemical called methyl salicylate, said study author Lukasz Stelinski, an assistant professor with UF's Institute of Food and Agricultural Sciences. [Citrus](#) trees release the same chemical, in the same amount, when under attack by the Asian citrus psyllid, the insect that transmits the [bacterium](#).

When the pests encounter a faint whiff of methyl salicylate they interpret it to mean that other psyllids have found a good place to feed, and hurry to join the banquet. One experiment in the study showed that psyllids were more likely to land on infected citrus trees than healthy ones.

It turns out the dinner bell is a bit misleading for the psyllids, he said. Greening infections deplete trees of some nutrients psyllids need, including nitrogen and phosphorus. Another experiment in the study

showed that psyllids feeding on infected trees frequently moved to healthy trees when given the opportunity.

“We believe they (the infected trees) don’t taste right to the psyllids,” said Stelinski, at UF’s Citrus Research and Education Center in Lake Alfred.

But even a short feeding session is enough for the invasive insects to suck up the greening bacterium, along with the plant sap they consume. When the psyllids fly to healthy trees and resume feeding, they’re likely to infect those trees.

The good news is that methyl salicylate is inexpensive and widely available, so it could be used to battle greening. For example, it could be put in traps used to monitor groves for the presence of psyllids, to attract the pests.

Another possibility: If [methyl salicylate](#) were released in small amounts throughout a citrus grove, the pervasive odor could camouflage infected trees’ scent. This strategy could reduce the chance that psyllids converge on infected trees, by making it appear that all trees were ringing the dinner bell.

Stelinski said he plans to pursue both ideas in future studies.

The psyllid is native to southern Asia and was first identified in Florida in 1998. The tiny insect initially caused problems by stunting tree growth and promoting mold infections.

[Citrus greening](#) disease is the most serious threat to Florida’s \$9 billion citrus industry. The disease weakens and eventually kills infected trees, and currently there is no cure.

According to a UF study, greening has cost the state \$3.63 billion since 2006, stemming from crop losses and loss of income to growers and citrus-related businesses.

Other members of the study team were Rajinder Mann, Jared Ali, Sara Hermann, Siddharth Tiwari and Kirsten Pelz-Stelinski, all at the Lake Alfred center, and Hans Alborn of the U.S. Department of Agriculture's Center for Medical, Agricultural and Veterinary Entomology in Gainesville.

More information: The article, which is open access, is at [dx.plos.org/10.1371/journal.ppat.1002610](https://doi.org/10.1371/journal.ppat.1002610)

Provided by University of Florida

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