

Saving OJ: Researchers develop genetically modified citrus trees resistant to greening disease

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After a decade of battling the highly destructive citrus greening bacterium, researchers with the University of Florida's Institute of Food and Agricultural Sciences have developed genetically modified citrus trees that show enhanced resistance to greening, and have the potential to resist canker and black spot, as well. However, the commercial availability of those trees is still several years away.

Jude Grosser, a professor of plant cell genetics at UF's Institute of Food and Agricultural Sciences Citrus Research and Education Center, and Manjul Dutt, a research assistant scientist at the CREC, used a gene isolated from the Arabidopsis plant, a member of the mustard family, to create the new trees. Their experiment resulted in trees that exhibited enhanced resistance to greening, reduced disease severity and even several trees that remained disease-free after 36 months of planting in a field with a high number of diseased trees. The journal PLOS ONE recently published a paper on their study.

"Citrus crop improvement using conventional breeding methods is difficult and time consuming due to the long juvenile phase in citrus, which can vary from four to 12 years," Grosser said. "Improvement of citrus through genetic engineering remains the fastest method for improvement of existing citrus cultivars and has been a key component in the University of Florida's genetic improvement strategy."

Citrus greening threatens to destroy Florida's \$10.7 billion citrus industry. The diseased bacterium first enters the tree via the tiny Asian citrus psyllid, which sucks on leaf sap and leaves behind the greening bacteria. The bacteria then move through the tree via the phloem – the veins of the tree. The disease starves the tree of nutrients, damages its roots and the tree produces fruits that are green and misshapen, unsuitable for sale as fresh fruit or, for the most part, juice. Most infected trees eventually die and the disease has already affected millions of citrus trees in North America.

Citrus greening was first detected in Florida in 2005. Florida has lost approximately 100,000 citrus acres and \$3.6 billion in revenues since 2007, according to researchers with UF/IFAS.

Read full, original post: [UF creates trees with enhanced resistance to greening](#)