

# Feds approve wider testing of spinach defenses against citrus greening disease

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Dr. Erik Mirkov reviews a Southern blot, part of the molecular biology research used to provide citrus trees with genetic defenses against citrus greening disease. Credit: Texas A&M AgriLife Communications photo by Rod Santa Ana

In a landmark step in the fight against citrus greening disease, the U.S.

Environmental Protection Agency has approved Southern Garden Citrus' application for an Experimental Use Permit under the Federal Insecticide, Fungicide and Rodenticide Act.

This allows Southern Garden Citrus to move forward in its development of the possible use of a [protein](#) to help control this devastating disease, according to management.

Research conducted by Dr. Erik Mirkov, a plant pathologist at the Texas A&M AgriLife Research and Extension Center at Weslaco, resulted in the production of proteins that appear to provide effective control of citrus greening disease.

Mirkov's patented use of spinach proteins also provides defense against diseases other plants, he said.

Ricke Kress, president of South Garden Citrus, said this latest development is a milestone in efforts to fight off citrus greening.

"Since this disease was first detected in the company's groves in 2005, the immediate decision was to become as proactive as possible to learn about the disease and, at the same time, develop methods and procedures to deal with the disease on a day to day basis," he said. "The company directed a research focus towards spinach, because it is already safely consumed daily and should be more favorably received by consumers."

Kress added that all U.S. regulatory controlled field trials and evaluations are ongoing, and there is no citrus fruit or juice product from the tests in the commercial product market today.

"A final solution to eliminating this disease may still take some years," Kress said, "but the latest EPA action and continuation of all research projects are major steps in the right direction."

Southern Garden Citrus is one of the largest citrus producers in the state, with three groves in southwest Florida, all of which are infected with citrus greening. Over the last several years, the company has worked to find an efficient and effective solution to this very serious disease, Kress said.

Dale Murden, interim president of Texas Citrus Mutual in Mission, a citrus growers' cooperative, said the EPA's decision is exciting news.

"This is wonderful news," he said. "We certainly appreciate the work on this disease by Dr. Mirkov, AgriLife Research and Southern Garden Citrus. We feel this will be beneficial to the citrus industry worldwide. We were very excited when we heard the news and are anxious to get the trials started."

Citrus greening disease, or Huanglongbing (HLB), is the most serious citrus disease in the world. HLB was first identified and confirmed in Florida in 2005. HLB is now found in every Florida county where citrus is grown commercially. Notwithstanding the threat that HLB poses, there are no successful control programs yet available for this disease.

The citrus company's activities include participation in a wide variety of research projects focused on developing environmentally sound and scientifically proven methods to manage and control the disease.

To reach this goal, Southern Garden Citrus is working with several universities and state and federal agencies, including the University of Florida's Institute for Food and Agricultural Sciences, the Florida Department of Agriculture and Consumer Services, Texas A&M AgriLife Research, the U.S Department of Agriculture and several independent researchers.

The EPA granted the new Experimental Use Permit to Southern Garden

Citrus on April 30. It authorizes large scale tests of citrus plants containing the protein derived from spinach, which the company has developed from Mirkov's patented discoveries in South Texas.

"Citrus greening is a bacterial [disease](#) that affects the vascular system of the tree," Mirkov said. "It basically shuts off the tree's ability to take up and use water and nutrients, causing the tree to die. We were able to improve the transgenic trees by having the genes express themselves in the vascular system."

John Sharp, Chancellor of The Texas A&M University System, said Mirkov's work on transgenic trees is another example of how AgriLife Research is impacting not just Texas, but the nation and world as well.

"By taking novel discoveries, protecting the intellectual property and partnering with a world-class organization like Southern Gardens, Texas A&M is quickly moving towards commercializing a biotechnology solution that could help save the citrus industry," Sharp said.

Consistent with the conditions established by EPA, Southern Garden Citrus may now move forward with field tests to evaluate the efficacy of the spinach protein against HLB in citrus plant tissues and continue generating the environmental, health and safety data that are required under federal law to support a fully registered product for commercial use.

On the basis of the company's related petition, EPA also concluded that residues of the spinach protein in [citrus](#) are safe for the public, and established a temporary allowance - known as tolerance exemption—to cover this.

Provided by Texas A&M University

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