Research in Support of Eradication and Control of Citrus Canker
Project No. 981-29P
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Project Report for FY 99-00, Year 2 of 3.

Abstract

ACC has continued to spread from residential Dade Co. and infested residential and commercial areas of Manatee Co. to numerous other locations in South Florida in spite of an aggressive survey and eradication program. New outbreaks in commercial citrus areas have mostly been traced back to the Miami infestation and are presumed to have occurred due to human movement. In spite of significant removal of trees from the core areas of infestations the inoculum has been spread repeatedly by hurricanes, tropical rainstorms, and tornadoes.

Objectives

1. Analyze survey data to predict areas most likely for future spread, for risk assessment, and for reevaluation of survey and eradication procedures.
2. Study bacterial populations on plant surfaces to determine their role in the risk of ACC recurring and test survival on wood, metal, and plastic surfaces to determine how bacteria are transported to uninfected citrus trees.
3. Develop and evaluate methods for detection and location of low incidence infections.
4. Sample infected plant material taken to local landfills to determine survival and potential for spread.
5. Sample air surrounding landfills chipping machinery for production of bacterial aerosols that might cause infection.
6. Evaluate new compounds for ACC control.

Summary of Accomplishments

Bacterial survival studies were conducted to determine the longevity and epidemiological significance of bacterial survival on plant material and inanimate objects in both shade and sun. Survival on most surfaces was 24 to 72 hours unless the surfaces were kept moist and in the shade. Bacterial aerosols were found to be generated by chipping machinery and the debris that escaped the chipping machinery was capable of initiating disease in trap plants.

Several new chemical materials including Induced Systemic Resistance (ISA) compounds are under evaluation for augmentation of traditional chemical and horticultural control strategies. The most promising compounds will be field tested in Brazil.

Studies on bacterial spread in urban Miami have determined disease gradients in Miami resulting from rainstorms. To accomplish this, over 19,000 were located via differential GPS, and then all trees in the area resurveyed monthly. Spread from point sources of infection was calculated. Spread by rainstorms was documented up to 5400 feet; however, 99% of the disease spread was contained within 1900 feet of known infected source trees. This information prompted USDA, APHIS and the Citrus Canker Eradication Program to replace the 125-ft rule by a 1900-ft rule based on this research. The 1900-ft rule was made a law by Florida Governor Jeb Bush in mid-2000.

As a consequence of the epidemiology study, a sentinel tree survey method to locate citrus canker

infections was also developed. The method has been deployed, validated, and implemented by APHIS and the Citrus Canker Eradication Program to find infestations before they spread.

Funding:
FCPRAC Grants $ 47,083
Agency Contribution $311,717 (USDA, ARS)
Other Grants $
Total $358,800

Source:

Source of Information:

Florida Citrus Production Research Advisory Council, 8th Annual Report, July 1999 to July 2000

Website:

http://citrusrdf.org/wp-content/uploads/2010/05/8thAnnualReport.pdf