Research in Support of Eradication and Control of Asiatic Citrus Canker (ACC)
Project No.: 981-29

Investigators: T. R. Gottwald
USDA - Orlando
J. H. Graham
IFAS - Lake Alfred

Length of Project: 3 years
This Report is for Year Number 1 (Year one of three)

Abstract

ACC has spread from residential Dade Co. and into Broward Co. in spite of an aggressive survey and eradication program. The new outbreaks in Manatee Co. have reemerged throughout the infected area. New outbreaks in commercial citrus in Colier and Hendry Co. areas have 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

A mobile containment greenhouse was moved from the Orlando USDA lab to the CCEP site at the OpaLocka airport. This laboratory establishes laboratory, greenhouse, and a base of operations for the numerous experiments we will conduct in the Miami area. 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 48 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. Trap lines of susceptible plant material were also established radiating from a known point source of disease in one location in Miami to document spread of the bacteria resulting from meteorological events.

Studies on bacterial spread in urban Miami have determined disease gradients in Miami resulting from rainstorms. To accomplish this over 12,000 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 3400 feet, however, 99% of the disease spread was contained within 1900 feet of known infected source trees. This information has been provided to the CCEP, FDACS/DPI, and USDA, and has lead to a 1900-ft recommendation by the Citrus Canker Task Force for removal of exposed trees subject to risk assessment.

Funding:FCPRAC Grants: $ 34,05

Source of Information:

Florida Citrus Production Research Advisory Council, 7th Annual Report, July 1998 to July 1999

Website:

http://citrusrdf.org/annrep/1999-ann-rep/fcpracnettar99.htm