



SOUTHERN BACTERIAL WILT - LATE STAGE

SOUTHERN BACTERIAL WILT (SBW)

Ralstonia solanacearum, Race 3 Biovar 2 (*r3b2*)

Southern Bacterial Wilt is a bacterium that causes wilting and death of geraniums, potato, tomato, peppers and eggplant. The pathogen can be transmitted through soil, contaminated irrigation water, equipment or humans. It also spreads very easily by transplanting infected plants and propagative materials. *R. solanacearum* r3b2, is a serious pathogen which could affect other important agricultural crops. SBW has only been observed in New York State through the spread of contaminated water and shipment of infected geranium cuttings. Greenhouse production that uses “ebb and flow” irrigation need to be very concerned.

LOCAL HISTORY

Geranium cuttings harvested on September 8, 2003 from a Michigan greenhouse rooting operation were traced back and confirmed to stock plants and contaminated water in Guatemala on January 6, 2004. Southern Bacterial Wilt has emerged as a federal “disease-of-concern” for all New York vegetable and greenhouse production. SBW is on USDA’s Agricultural Bioterrorism Act of 2002 Select Agents and Toxins list. Three cultivars of the Americans series were confirmed positive for SBW in 2003 and 2004 resulting in 61,786 geraniums destroyed.

IDENTIFICATION

STAGES OF SBW SYMPTOMS

- Early wilting
- More advance wilting and abnormal leaf yellowing (chlorosis)
- Abnormal yellowing of entire plant
- Whole blocks of geraniums showing wilting
- Stem wilting, chlorosis and necrosis due to *Ralstonia solanacearum* infection of geranium



EARLY WILTING



ADVANCE WILTING



SYMPTOMATIC UNROOTED CUTTINGS

SBW INJURY & HOST PLANTS

Ralstonia solanacearum r3b2 is a bacterial pathogen that causes several diseases on a wide range of plants. There are four different races according to host range and five biovars based on biochemical tests. Race 1 biovar infects tomatoes and many other vegetable and ornamental species. Race 2 infects bananas in the Caribbean, Brazil and the Phillipines. Race 3 biovar 2 infects certain solanaceous vegetables and ornamental crops, causing brown rot of potato, bacterial wilt of tomato and eggplant, and southern wilt of geranium. Other known hosts include: common solanaceous weed species, bittersweet, nightshade, and stinging nettle. Race 4 affects ginger in much of Asia.

SOUTHERN BACTERIAL WILT - LIFE CYCLE

Design by: New York State Department of Agriculture & Markets

1. SYMPTOMLESS STOCK PLANTS



Symptomless unrooted cuttings arrive from a country outside the U.S.A. where *Ralstonia solanacearum* Race 3 Biovar 2 is endemic.

2. SYMPTOMLESS CUTTINGS



4. QUARANTINE & DIAGNOSIS

Plants with suspicious symptoms are quarantined and samples are sent to the



NEPDN lab for initial diagnostic screening by ELISA, to be followed by PCR if initial tests are positive.

3. SYMPTOMS APPEAR



Infected plants develop symptoms of leaf chlorosis: necrotic wedges, wilt and stunted growth.

Disease cycle interrupted by quarantine actions: eradication and sanitation

MANAGEMENT

Control measures: eradication of all containers, soil and plants. Greenhouse benches are drenched and sanitation measures are taken to avoid further contamination. Follow-up visits are made to assure that no geraniums, tomatoes, potatoes, peppers or eggplants are grown on these benches for one growing season. Inspection and grower awareness are CAPS primary early detection protocol. The greenhouse and nursery industry is the second largest agricultural sector in New York and geraniums account for 30% of bedding plant sales in New York. www.aphis.usda.gov/plant_health/plant_pest_info/ralstonia/index.shtml



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