

Biology of bacterial leaf spot (*Xanthomonas campestris* pv. *cucurbitae*) of cucurbits for the development of effective disease management practices.

Principal Investigator: T. A. Zitter, Department of Plant Pathology, Cornell University

Cooperators: J. L. Drennan, Department of Plant Pathology, Extension educator
C. Bornt, Walt Whitwood, Petoseed/Seneca Hybrids Brand (Hall, NY), and grower Roger Powers (Monroe Co)

Abstract

This project addressed the biology of bacterial leaf spot (BLS) (*Xanthomonas campestris* pv. *cucurbitae*) from the aspect of pathogenicity and timing of infection of foliage and fruit to better understand its occurrence, spread, and control in the field. Selected pumpkin varieties ('Snack Jack' and 'Spirit') were inoculated and transplanted into replicated trials to establish the amount and spread of the disease. Extensive infection and spread occurred, confirming that this disease is extremely serious for pumpkins. Since copper fungicides are currently the only available means of control, we attempted to determine the timing and effectiveness of copper sprays with 4, 3, or 2 spray applications. Sprays failed to control either the foliar or fruit rot phase of the disease. Observational trials confirmed that cucurbits vary in their susceptibility to BLS: 'Snack Jack' and 'Spirit' pumpkins > Butternut squash > 'Golden Delicious' squash > 'Burgess buttercup' squash. Seed harvested from infected 'Snack Jack' and 'Spirit' pumpkins were readily contaminated with bacteria resulting in 10-31% infected seedlings.

Angular leaf spot (ALS) (*Pseudomonas syringae* pv. *lachrymans*) is a pathogen that also infects cucurbit foliage and fruit and superficially resembles BLS. Field plots were established to evaluate ALS symptom appearance on assorted cucurbit plants and fruit, but BLS infections quickly overwhelmed these plots.

One encouraging development of the extensive spread of BLS was the unplanned, uniform infection of an adjoining butternut squash fungicide trial. Two spray treatments that included the systemic acquired resistance product Actigard™ had significantly less BLS-infected fruit when compared with 11 fungicide treatments plus an unsprayed control. Actigard™ has previously been shown to control bacterial leaf spot in tomato, but this is the first report of bacterial disease control in cucurbits, and under natural field conditions.

No commercial fields developed BLS in 1998, however another bacterial disease causing lethal wilting of cucurbits (mainly pumpkin) was discovered or reported in 6 counties in NYS. Tests are in progress to identify the bacterium responsible and to reproduction disease symptoms and bacterial reisolations.

For a printed copy of the entire report, please contact the NYS IPM office at:

IPM House
630 W. North St.
New York State Agricultural Experiment Station
Geneva NY 14456
315-878-2353