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LATE BLIGHT OF TOMATO AND POTATO IN CONNECTICUT—HOW TO PREPARE FOR 2010

Last year, 2009, an unusually early and widespread outbreak of late blight of tomato and potato occurred throughout Connecticut and the Northeast. Tomatoes and potatoes in commercial fields, backyard gardens, greenhouses, and high tunnels were affected. This devastating disease has historical significance for its association with the Irish potato famine of the 1840's, and it rapidly kills plants under favorable environmental conditions such as cool, cloudy, windy, wet weather—conditions that characterized May, June, and July 2009. Strain US22 of the late blight pathogen, *Phytophthora infestans*, was responsible for most of the losses in the Northeast.

The 2009 outbreak was unprecedented for a number of reasons. It occurred unusually early in the growing season and was initiated by widespread distribution and sale of infected tomato transplants by “big box” and chain stores throughout Connecticut and the Northeast. Once the infected transplants were set in the ground, they were exposed to favorable weather for disease development and spread—a recipe for a significant disease outbreak.

HOW TO PREPARE FOR 2010:

For tomato growers with problems in 2009, the situation is promising, since *P. infestans* is an obligate pathogen, which does not survive in the absence of living tissues. That means it will not survive on plant debris, in the soil, on seeds saved from last year's fruit, or on stakes or cages associated with last year's diseased plants.

However, the situation is slightly different for potato growers. In this case, 2010 volunteer plants from potato tubers from infected plants from 2009 that were saved, survived compost piles, or overwintered directly in the garden could serve as potential sources of inoculum for the 2010 season.

Management of late blight requires aggressive measures that include combined use of culture, scouting, sanitation, and when necessary, fungicide sprays.

1. It is very important to start each season pathogen-free by purchasing healthy, tomato transplants or certified potato tubers. This effectively eliminates initial sources of inoculum.
2. Choose fields with good air movement and well drained soils. Rotating tomatoes into new areas of the garden every year is a good idea. Although the

late blight pathogen does not persist in the soil, other plant pathogens such as those associated with early blight and Septoria leaf spot, can overwinter in plant debris in the soil so rotation can be very helpful.

3. Pull all volunteer tomato or potato plants, as well as any Solanaceous weeds that grow in and around the garden.
4. Scout and inspect all tomato or potato plants daily or weekly. As soon as symptoms are detected, immediately pull and remove whole plants and place them in a plastic bag to avoid carrying the infected material through the garden. Infected plant material should NOT be composted.
5. If you observe suspicious symptoms on tomatoes or potatoes, it is important to have the disease accurately identified by a specialist. A fact sheet and image gallery of late blight can be found at: http://www.ct.gov/caes/lib/caes/documents/publications/fact_sheets/plant_pathology_and_ecology/late_blight_of_tomato_and_potato_in_connecticut_2009.pdf and http://www.ct.gov/caes/lib/caes/documents/publications/fact_sheets/plant_pathology_and_ecology/late_blight_image_gallery_2009.pdf.
6. Since water is important to the spread and development of late blight, avoid overhead watering. It also helps to avoid working with plants (e.g., staking, suckering, harvesting) when they are wet, since this pathogen can be spread during these types of activities.
7. Staking and mulching can also help reduce infections. Staking increases air circulation and helps to dry the leaves—this reduces favorable conditions for infection.
8. Research is ongoing to develop cultivars of potato with effective genetic resistance to *P. infestans*. Some potato

cultivars available in the U.S. that have moderate to strong foliar (and tuber) resistance are ‘Defender’ (russet, brown skin and white flesh), ‘Jacqueline Lee’ (round, yellow skin and flesh), and ‘Ozette’ (fingerling, white skin and flesh). Research is also underway to develop tomatoes with resistance or tolerance to late blight. However, last year, the tomato cultivars Mountain Magic F1 (large cherry), and Plum Regal F1 (plum) showed excellent resistance to the strain of late blight most prevalent in the region.

9. The final strategy for minimizing late blight involves selection, timing, and application of fungicide sprays. Fungicides can be effective and are often necessary to supplement other management strategies previously outlined, especially when weather is favorable for disease. When there is a risk of late blight occurring, fungicide applications need to be used on a regular preventive schedule. Thorough coverage of all parts of the plant is necessary and the sprays should be applied until run-off. The fungicide label will contain information on dosage rates, pre-harvest interval (PHI), and safety precautions.
 - a. For Connecticut homeowners, the fungicides chlorothalonil and copper (organic option) are registered for use. In addition, several biological controls (biopesticides) acceptable for organic use are available (with trade names such as Sonata, Serenade, Regalia, and Oxidate). Since most fungicides are protectant materials, they should be applied before symptoms are observed and repeated as necessary when conditions are

- favorable for disease development and spread.
- b. Commercial growers should follow a fungicide program that includes both protectants and systemics. Systemics, which have translaminar or curative properties, are most effective when mixed with protectants such as chlorothalonil or mancozeb. Since *P. infestans* can develop resistance to systemic fungicides, mixing systemic with contact fungicides is often necessary. Organic options for commercial growers include copper products and several biological controls (with trade names such as Sonata, Serenade, Regalia, and Oxidate).

For answers to questions or assistance with diagnosing late blight, please contact the Experiment Station's
Plant Disease Information Office
Phone: 203.974.8601
Statewide Toll-Free: 877.855.2237
Website: www.ct.gov/caes/pdio

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The following fact sheets are available as PDFs on the Experiment Station's website or in hard copy upon request:

Late Blight of Tomato and Potato in Connecticut 2009 by S. M. Douglas.

http://www.ct.gov/caes/lib/caes/documents/publications/fact_sheets/plant_pathology_and_ecology/late_blight_of_tomato_and_potato_in_connecticut_2009.pdf

Late Blight in Connecticut 2009 Image Gallery by S. M. Douglas.

http://www.ct.gov/caes/lib/caes/documents/publications/fact_sheets/plant_pathology_and_ecology/late_blight_image_gallery_2009.pdf.