

Early blight of potatoes and tomatoes

Symptoms

Early Blight symptoms in tomato and potato range from damping-off, to collar rot, stem canker, leaf blight, fruit rot (tomato) and tuber rot (potato).



Figure 1. Early blight on potato leaf, top. Details of a spot displaying the typical concentric rings, bottom. Photo: Tom Isakeit.

Foliar symptoms begin on older leaves first, as small, dark, papery flecks, which grow to become brown-black angular areas surrounded by a yellow halo (Fig. 1 and 2). These spots have concentric rings of raised and depressed dead tissue that give them a “target” appearance (Fig. 1 and 2).



Figure 2. . Early blight angular spots on tomato leaf, displaying the typical concentric rings and a yellow halo. Photo: Diana Schultz.

As the spots enlarge, the whole leaf may turn yellow and die. Infected stems show sunken, elongated spots that may also display the typical concentric rings. Lesions in tubers appear as slightly sunken dark irregular spots with raised borders; a dry rot develops internally under the skin. On tomato fruit, spots are also sunken. Lesions usually start at the point of the stem attachment and may expand to the entire upper portion of the fruit. Mature lesions may become covered by black conidia (Fig. 3).

Prepared by Dr. Diana Schultz¹ and Dr. Ronald D. French²
¹Plant Pathologist (Fort Myers, Florida) ²Assistant Professor and Extension Plant Pathologist (Amarillo, TX)
Texas AgriLife Extension Service; The Texas A&M System
December 5, 2009

The information given herein is for educational purposes only. References to commercial products or trade names are made with the understanding that no discrimination is intended and no endorsement by Texas AgriLife Extension Service personnel is implied.
Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.
The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

PLPA-Pot009-01



Figure 2. . *Alternaria* lesions on tomato fruit covered by masses of black conidia. Photo: Diana Schultz.

Causal Agent

Alternaria solani is the causal agent of early blight of tomatoes and potatoes. This fungus produces dark to black conidia (asexual spores). This fungus has not been found to produce sexual spores.

Potato and tomato are the main hosts of *A. solani*. Other solanaceae (including eggplant, pepper, horse nettle and black nightshade), wild cabbage, cucumber, and zinnia are also known hosts of *A. solani*.

Inoculum Source and conditions

The pathogen survives primarily on infected crop debris, in soil for years. It can also overwinter on volunteer hosts and weeds. Conidia are spread by wind and splashing water. Free standing water on foliage, warm temperatures (75-84°F) are favorable to infection. Infection occurs directly or through stomata primarily on older leaf tissue and through wounds or through moist induced

swelling of lenticels on tubers. Symptoms appear within a week of infection. Multiple cycles can occur in one crop season under favorable conditions. Susceptibility to *A. solani* increases with the age of the plant tissue and of the plant, particularly after fruit and tuber initiation.

Control

- Use pathogen-free seed and transplants, resistant varieties.
- Reduce inoculum by destroying volunteer hosts and weeds, and by plowing under crop debris.
- Rotate to non hosts for at least two years.
- Select well drained and well aerated fields, promote air circulation, and avoid dense plant stands and prolonged overhead irrigation.
- Maintain adequate soil fertility levels, avoiding nitrogen deficiency at the end of the plant cycle.
- Harvest potato tubers when mature, minimizing wounding.
- Scout the fields and use forecasting programs when available to reduce fungicide use and cost.
- Apply protectant fungicides every 7-10 days; alternate contact and systemic fungicides to control the disease.

Prepared by Dr. Diana Schultz¹ and Dr. Ronald D. French²

¹Plant Pathologist (Fort Myers, Florida) ²Assistant Professor and Extension Plant Pathologist (Amarillo, TX)
Texas AgriLife Extension Service; The Texas A&M System

December 5, 2009

The information given herein is for educational purposes only. References to commercial products or trade names are made with the understanding that no discrimination is intended and no endorsement by Texas AgriLife Extension Service personnel is implied.

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.
The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating