

Early Blight of Tomatoes

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Early blight, caused by the fungus *Alternaria solani*, is one of the most common diseases of tomatoes in Virginia. It occurs to some extent every year wherever tomatoes are grown. In spite of its name, the disease may occur at any time during the growing season. The fungus attacks leaves, stems and fruit. It can also cause disease on potato, pepper, and eggplant.

Symptoms

Alternaria solani may cause damping-off in the seedbed and a stem canker or collar rot that is destructive to transplants in the field (Fig. 1). However, the first and most noticeable symptoms are usually the small, irregular, brown spots that form on older, lower leaves. These spots may enlarge until they are one-half inch in diameter. Spots have concentric rings or ridges that form a target-like pattern and are often surrounded by a yellow halo (Fig. 2). Some spotting of the leaves may



Fig. 2. Tomato leaflet showing target-ring lesions characteristic of early blight. (Photo by R. C. Lambe)



Fig. 1. Tomato stem showing collar rot and stem canker symptoms caused by the early blight fungus. (Photo by R. C. Lambe)



Fig. 3. Stem lesions caused by *Alternaria solani*. (Photo by R.C. Lambe)

appear early in the season, but the greatest damage usually appears after fruit set. Severe defoliation may occur during periods of high temperature and high humidity and expose fruit to sunscald.

On stems, lesions are initially small, dark, and slightly sunken. Small spots enlarge to form elongated lesions with concentric markings similar to those on the leaves (Fig. 3). Large spots

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that occur on the stem near the ground line can cause partial girdling or collar rot. Plants that survive the early stem cankers usually remain small and produce few fruits.

Early blight also affects the fruit. Dark, sunken, leathery lesions appear on the stem-end of the fruit. On older fruit these lesions reach considerable size and the rot extends deep into the flesh of the fruit. Heavily infected fruit usually drops. Infected tomatoes that reach maturity are not marketable. Under environmental conditions favorable for disease development, the fungus may also cause spotting of the fruit stems and blossoms and drop of young fruit.

Disease Cycle

- *Alternaria solani* can survive from year to year in old, diseased vines left in the field. Splashing rain, running water, and moving machinery can spread the fungus in the field. Symptoms are usually visible about 10 days after the plants are infected. The disease is greatly influenced by the degree of thriftiness of the plants. Infection takes place slowly unless the plants have been weakened or wounded.

Control

Cultural Control

- Obtain the best certified seed or transplants. Prevention of seedling infection is very important.

- Practice crop rotation. Tomatoes should not be planted in areas where susceptible vegetables, such as tomato, potato, pepper, or eggplant, have been grown during the previous three or four years.
- Destroy solanaceous weeds, such as black nightshade or Jerusalem cherry, which can serve as hosts of the fungus.
- Space transplants to allow good air circulation, thereby permitting plants to dry off rapidly after rain and dews. This will reduce the risk of disease development.
- Plow under or remove old vines as soon as harvest is completed.

Chemical Control

- Apply a fungicide, such as chlorothalonil (e.g. Daconil 2787) or maneb (e.g. Maneb), on a preventative basis. Follow label rates or consult the current *Virginia Pest Management Guide for Home Grounds and Animals* (VCE Publication 456-018) or *Commercial Vegetable Production Recommendations* (VCE Publication 456-420) for details on fungicide control.

Resistance

Tomato cultivars vary in their resistance to the disease. The cultivars, Mountain Fresh, Mountain Supreme, and Plum Dandy, have resistance to early blight.

Refer to the current *Virginia Pest Management Guide for Home Grounds and Animals* (VCE Publication 456-018), <http://www.ext.vt.edu/pubs/pmg/>, for details on the proper use of pesticides.

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