

Early Blight of Tomato

Bulletin #5087

Introduction

Early blight of tomato, caused by the fungus *Alternaria solani*, is one of the most common foliar diseases of tomatoes in the Northeast and is also common on potatoes. This disease causes direct losses by the infection of fruits and indirect losses by reducing plant vigor. Fruit from defoliated plants are also subject to sunscald.

Environmental Conditions

Alternaria spores germinate within 2 hours over a wide range of temperatures but at 80 to 85°F, in the presence of water, may only take 1/2 hour. Another 3 to 12 hours are required for the fungus to penetrate the plant depending on temperature. After penetration, lesions may form within 2-3 days or the infection can remain dormant awaiting proper conditions (60°F and extended periods of wetness). *Alternaria* sporulates best at about 80°F when abundant moisture (as provided by rain, mist, fog, dew, irrigation) is present. Infections are most prevalent on poorly nourished or otherwise stressed plants.

Symptoms

Early blight produces a wide range of symptoms at all stages of plant growth. It can cause damping-off, collar rot, stem cankers, leaf blight, and fruit rot. The classic symptoms occur on the leaves where circular lesions up to 1/2" in diameter are produced. Within these lesions dark, concentric circles can be seen. The leaf blight phase usually begins on the lower, older leaves and progresses up the plant. Infected leaves eventually wither, die, and fall from the plant.

Survival and Dispersal

The fungus spends the winter in infected plant debris in or on the soil where it can survive at least one and perhaps several years. It can also be seed borne. New spores are produced the following season. The spores are transported by water, wind, insects, other animals including man, and machinery. Once the initial infections have occurred, they become the most important source of new spore production and are responsible for rapid disease spread.

Control

1. Use only clean seed saved from disease-free plants.
2. Remove and destroy crop residue at the end of the season. Where this is not practical, plow residue into the soil to promote breakdown by soil microorganisms and to physically remove the spore source from the soil surface.
3. Practice crop rotation to non-susceptible crops (3 years). Be sure to control volunteers and susceptible weeds.
4. Promote good air circulation by proper plant spacing.
5. Orient rows in the direction of prevailing winds, avoid shaded areas, and avoid wind barriers.
6. Irrigate early in the day to promote rapid drying of foliage.
7. Healthy plants with adequate nutrition are less susceptible to the disease.
8. Minimize plant injury and the spread of spores by controlling insect feeding.
9. Hand picking diseased foliage may slow the rate of disease spread but should not be relied on for control. Do not work in a wet garden.
10. Use resistant or tolerant varieties.
11. Several fungicides are registered to control this disease and are listed in the table on the back.

Fungicides for Early Blight Control

| Fungicide | Typical Application Interval | Examples of Trade Names |
|------------------------------|------------------------------|---|
| azoxystrobin, pyraclostrobin | 7 to 14 days | Quadris, Amistar, Cabrio EG |
| Bacillus subtilis | 5 to 7 days | Serenade |
| chlorothalonil | 7 to 14 days | Daconil, Bravo, Echo, Fugonil, and others. |
| copper products | 7 to 14 days | Bordeaux Mixture, Kocide, Tenn-Cop, Liqui-cop, Basicop, Camelot |
| hydrogen dioxide | Commercial only, see label | Oxidate |
| mancozeb and maneb | 7 to 14 days | Dithane, Penncozeb, Manex, Mancozeb, Maneb |
| potassium bicarbonate | 5-14 days as needed | Armcarb 100, Firststep |
| ziram | 7 to 14 days | Ziram |

**When Using Pesticides
ALWAYS FOLLOW
LABEL DIRECTIONS!**

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Where trade names are used, no discrimination is intended and no endorsement by Cooperative Extension is implied.