



Arkansas Plant Health Clinic Newsletter

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Tomato

Early Blight

Early Blight of Tomato, caused by *Alternaria solani* or *Alternaria tomatophila*, is one of the most common and destructive tomato diseases in the garden. On susceptible cultivars Early Blight will cause many of the leaves to drop as well as causing spots on stems and fruit. Lesions of Early Blight on leaves form characteristic "target spots" and may be surrounded by yellow regions as the infection develops. These spots usually begin at the bottom of the plant. Stem infections on older plants are oval to irregular, dry brown areas with dark brown concentric rings.

Fruit spots are black and leathery, with raised concentric ridges. They generally occur near the stem. Often infected fruit fall from the stem. The best control option is the use of resistant varieties and a crop rotation of three years between solanaceous crops. Fungicides on susceptible tomato must be started early in the growing season. Homeowners may use Ortho Garden Disease Control, or Fertilome Liquid Fungicide, or Bonide Fung-onil Multipurpose Fungicide Concentrate, or Garden Tech Daconil Fungicide Concentrate, or Bonide Mancozeb

Flowable w/Zinc, Monterey Fruit Tree, Vegetables and Ornamental Fungicide. Organic Gardeners may try Natria Disease Control, or Bonide Liquid Copper Fungicide Concentrate, or Kaligreen, or Bonide Remedy, or Bonide Copper Dust, or Hi-Yield Bordeaux, or Serenade.

Tomato Early Blight-*Alternaria solani*



**Photo by Sherrie Smith, University of Arkansas
Cooperative Extension**



Tomato Early Blight-*Alternaria solani*



R.W. Stevenson, APS Images

Tomato Early Blight on fruit-*Alternaria solani*



L.R. Jones and Grout, APS Images

Tomato Early Blight on stem-*Alternaria solani*



L.R. Jones and Grout, APS Images

Septoria Leaf Spot

The Plant Health Clinic has received numerous samples of tomato with severe leaf damage. Septoria Leaf Spot caused by *Septoria lycopersici* is one of the most damaging diseases of tomato foliage. Septoria is favored



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by warm temperatures and high humidity. Symptoms of Septoria generally appear on the lower leaves after the first fruit sets. Lesions are circular, about 2.6mm in diameter, with dark brown margins with tan to gray centers. A narrow yellow halo may often be observed around the lesion. Small black fruiting bodies of the fungus (pycnidia) may be observed in the centers of the lesions using a hand lens. Lesions may coalesce to form large, blighted areas. Foliage turns yellow, then brown, and dry. The plant has an almost burned appearance. There are no resistant cultivars available. Control measures include crop rotation with a non-host, control of weeds in tomato crops, removal of all crop debris, and avoidance of night watering and overhead irrigation. Protective fungicides at regular intervals during the growing season will be necessary for most growers. Quadris, Cabrio, Flint, Bravo, Mancozeb, and Gavel are labeled for Septoria leaf spot control. Homeowners may use Ortho Garden Disease Control, or Fertilome Liquid Fungicide, or Bonide Fung-onil Multipurpose Fungicide Concentrate, or Garden Tech Daconil Fungicide Concentrate, or Bonide Mancozeb Flowable w/Zinc, Monterey Fruit Tree, Vegetables and Ornamental Fungicide. Organic Gardeners may try Natria Disease Control, or Bonide Liquid Copper Fungicide Concentrate, or Kaligreen, or Bonide Remedy, or Bonide Copper Dust, or Hi-Yield Bordeaux, or Serenade.

Tomato Septoria Leaf Spot- ***Septoria lycopersici***



Photo by Sherrie Smith, University of Arkansas Cooperative Extension



Tomato Septoria Leaf Spot- *Septoria lycopersici*



Photo by Christa Littlefield, University of Arkansas Cooperative Extension

Tomato Septoria Leaf Spot- *Septoria lycopersici*



Photo by Bob Harper, University of Arkansas Cooperative Extension

Tomato Septoria Leaf Spot- *Septoria lycopersici*



Photo by Keith Gresham, University of Arkansas Cooperative Extension



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Leaf Mold

Leaf Mold, caused by *Passalora fulva* (previously called *Fulvia fulva* or *Cladosporium fulvum*), is a disease found commonly in greenhouse tomatoes, and less frequently in field-grown tomatoes. However, we do see it in the field in seasons with long periods of high humidity and prolonged leaf wetness. The first symptoms on the leaves are small yellow spots on the upper leaf surface with corresponding olive-green to grayish-purple, velvety spots on the underside of the leaves. Leaves turn brown, crinkle up and die, falling from the plant prematurely. Fruit infections show as black, leathery, stem end rot on both green and ripe fruits. The rots can encompass 1/3 of the fruit surface. Resistant varieties are available, but this fungus mutates rapidly, so a previously resistant variety may prove susceptible in subsequent years. It is important to avoid overhead irrigation when watering the plants. If overhead irrigation can't be avoided, do it early in the day so the leaves have a chance to dry. Don't over-crowd plants. Provide adequate row and plant spacing. After harvest, remove and destroy tomato debris. Practice crop rotation. Plant in an area that has not had tomatoes, potatoes, eggplant, or peppers planted in that spot the last three years. Fungicides such as Gavel, or Tanos, or products containing Chlorothalonil provide protection if applied weekly.

Tomato Leaf Mold (underside of leaf)-*Passalora fulva*



Photo by Sherrie Smith, University of Arkansas Cooperative Extension



Tomato Leaf Mold (top of leaves)-*Passalora fulva*



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Late Blight

Tomato Late blight, caused by *Phytophthora infestans*, is perhaps the most destructive disease affecting tomato and potato crops. Plants are particularly vulnerable when grown under cool temperatures, sprinkler irrigation, or prolonged periods of rain and heavy dew. When the humidity is 100% and temperatures are

between 18-24 °C, the disease can run rapidly through a field. Leaves, flowers, stems, and fruit may all be infected. Lesions first appear on the leaves petioles or stems as small water-soaked spots which grow rapidly into large pale green to brown lesions. A grayish-white fuzzy mold grows on the lesions. Initially the mold can be observed on both sides of the leaf, but later is found on the underside. Affected tissues become brown, shriveled, and dies. The lesions on the fruit begin as olive-colored greasy spots. These may enlarge to engulf the entire fruit. Whitish-gray fuzzy mold can also occur on the fruit, followed by fruit rot. Rotted fruit and tomato vines let off a nasty odor. Ideally, tomatoes should be grown on raised beds in well-drained soil. Fruit should be prevented from touching the ground by staking or mulching. Avoid over watering. Ridomil Gold may be applied as a ground surface spray under the vines 4-8 weeks before harvest. Alternatively, it can be applied as a foliar spray beginning when crown fruit are 1/3 their mature size. Quadris 2.08, Quadris Opti, Cabrio 20EG, Gavel 75DF, Presidio 45C, Previcur Flex, and Reason 500SC are also labeled for Late blight control in commercial fields. Home gardeners may use Maneb or Mancozeb. There are now some very good resistant cultivars:

- **Defiant** – Determinate (bush) plants produce round, medium size red fruits, rated at 70 days to maturity.
- **Iron Lady** – Determinate (bush) plants produce round, medium size red fruits, rated at 75 days to maturity.

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- **Jasper** – Tall indeterminate (cordon) plants bear trusses of red cherry tomatoes starting 60 days after planting. All America Selections winner and RHS Award of Merit.
- **Lemon Drop** – Indeterminate (cordon) plants bear hundreds of small yellow-green tomatoes in 80 to 90 days. Open-pollinated heirloom variety, a sport of 'Snow White' cherry.
- **Matt's Wild Cherry** – Sprawling indeterminate (cordon) plants bear scads of tiny red cherry tomatoes starting 55 to 60 days after planting. Open-pollinated heirloom from Mexico.
- **Mountain Magic** – Vigorous indeterminate (cordon) large red cherry tomatoes, rated at 75 days to maturity.
- **Mountain Merit** – Determinate plants produce large red round fruits about 75 days after planting. All-America Selection winner.
- **Mr. Strihey** – Indeterminate (cordon) plants produce medium size round fruits marbled with red and yellow in about 80 days. Open pollinated heirloom.
- **Plum Regal** – Determinate plants produce red plum tomatoes weighing 3 to 4 ounces each, rated at 80 days to maturity.

This bulletin from the Cooperative Extension Plant Health Clinic (Plant Disease Clinic) is an electronic update about diseases and other problems observed in our lab each month. Input from everybody interested in plants is welcome and appreciated.

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