AVRDC - The World Vegetable Center

Fact Sheet

Tomato Diseases

Black Leaf Mold

Pseudocercospora fuligena, also referred to as *Cercospora fuligena*

Found in warm climates, and particularly damaging in Asia

Symptoms

Major symptoms occur on the foliage but they may also occur on petioles, stems, and fruit peduncles (but not on the fruit itself).

All stages of growth are attacked.The initial symptoms appear as small, pale yellow lesions with no definite margins on either the upper or lower leaf surface. The lesions on the lower leaf surface have a white fungal growth that turns to gray to black as the fungus sporulates. Later, black sooty fungal growth will occur on both the upper and lower leaf surfaces. This distinguishes it from leaf mold (*Fulvia fulva* = *Cladosporium fulvum*) where the fungus sporulates on the lower leaf surface only and where the fungal growth is generally of a lighter brown to purple color.

As the disease develops, the affected areas on each leaf will coalesce to form large patches. The affected leaves wilt, dry with age, and usually remain hanging on the plant with a dark soot-covered appearance.

Disease development is slow and severe symptoms are usually present only late in the season; however, major yield losses are possible if infection occurs early. Seed-borne infection has not been reported.

How to Identify Black Leaf Mold

Black sooty patches develop on both upper and lower leaf surfaces (left).
The soot-covered leaves wilt, dry, and usually remain hanging on the vine (center and right).

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Conditions for Disease Development

Many cycles of disease development are possible during the growing season. Disease development is influenced by temperature, relative humidity, and long periods of leaf wetness. The presence of moisture on the foliage from dew, rainfall and fog provides good conditions for disease development. Increasing periods of leaf wetness are associated with increasing disease severity; consequently, the disease may become more serious during the rainy season when warm temperatures prevail. Its spores will not germinate if the relative humidity is less than 85%.

The fungus survives in plant debris (e.g., dried leaves for up to 18 months at 4 to 20 °C) and can produce spores in this debris at the beginning of the growing season. The fungus does not survive buried in soil for four months at high temperatures.

Spores are disseminated over long distances by wind and over shorter distances by wind-driven rain, water, or carried by workers on their clothes, tools and implements.

Control

Tolerant varieties exist. Check with your local extension agent to determine the varieties best adapted to your region.

Protectant fungicides can be used to control this fungus. Practice crop rotation with broad-spectrum fungicides to prevent development of resistant strains of the fungus.

Check tomato plants in fields for early detection of the disease. This will reduce the number of fungicide sprays that may need to be applied later. Instruct workers to be aware of disease symptoms and to alert management at the first signs of the disease.

Avoid planting solanaceous crops such as pepper or eggplant for two years and control weeds (particularly black nightshade) that may serve as alternative hosts.

Remove black leaf mold-affected tomato debris from the field to reduce carryover of inoculum, or incorporate the debris into the soil. The latter will promote rapid breakdown of diseased leaf tissue and exposure of the fungus to soil microorganisms that enhance its destruction.

Avoid planting new tomato plants while diseased plants remain nearby. Spores from the diseased older plants may be readily disseminated to the younger plants in the same location resulting in higher levels of disease at an earlier stage in the development of the younger crop.

Reduce incidence of leaf wetness by staking tomato plants, spacing plants to allow for good air movement, and avoiding overhead irrigation.

For more information on the production of tomato and other vegetables, go to <www.avrdc.org>.

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