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UT Extension
SP277-W

Plant Diseases

Foliar Diseases of Tomato

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EARLY BLIGHT, caused by the fungus *Alternaria solani*, is the most common disease of tomatoes in Tennessee. The fungus causes a leaf blight and may cause seedling disease, collar rot, stem canker or fruit rot. Stem cankers are dark sunken areas, usually restricted to one side of a stem. These spots enlarge and girdle the stem, causing collar rot. Plants affected with *Alternaria* collar rot or stem cankers are usually stunted and pale.

Leaf spots begin on the lower leaves. The spots are circular, up to 1/2 inch in diameter, brown and contain dark concentric rings like a target board (Figure 1). The leaves turn brown and then dry up. Entire plants can be defoliated, and the exposed fruit is prone to sunscald (Figure 2).

Fruit rots are usually dark, sunken, leathery lesions around the fruit stems or growth cracks. Like stem and leaf lesions, the fruit lesion often shows a target pattern.

The early blight fungus is spread by wind and insects. The fungus overwinters in crop debris and on seeds and can probably survive several years in the absence of a host.

Figure 1. Leaf spot cause by the early blight fungus.

SEPTORIA LEAF SPOT, caused by the fungus *Septoria lycopersici*, is most evident after the plants begin to fruit. Small, gray, circular spots with dark borders up to 1/8 inch in diameter appear first on older leaves. During favorable weather conditions (warm, wet), blighting begins on the old leaves and spreads toward the new growth.

LATE BLIGHT, caused by the fungus *Phytophthora infestans*, can be very destructive and fast-

spreading. However, it appears sporadically because the casual fungus requires mild, moist weather.

Greenish-black, water-soaked lesions appear on leaves. A pale green halo is often observed around the leaf spots as they enlarge. White, downy fungal growth appears on the underside of the lesions. Under ideal conditions, the fungus spreads so rapidly that almost all of the foliage is infected. On tomato fruit, greenish-brown, greasy-appearing spots may enlarge until the whole fruit is affected (Figure 3).

Inoculum sources include infected tomato transplants or potato tubers, or the spores can be borne on prevailing winds from the south.

GRAY MOLD, caused by the fungus *Botrytis cinerea*, occurs primarily in greenhouses and the higher elevations of Tennessee. The signs include a brown to dark gray fungal growth on petioles and leaves. The leaf collapses and withers. Infected fruit become soft and watery, and the flesh turns light gray.

The gray mold fungus is found everywhere and infects plants through wounds when the relative humidity is above 90 percent and the temperature is less than 77 F. The spores are readily transported by wind.

LEAF MOLD, caused by the fungus *Cladosporium fulvum*, is primarily a greenhouse tomato problem. Pale green or yellowish spots appear on the upper leaf surface. An olive-green, velvety fungal growth appears on the lower surface of the spots.

BACTERIAL SPOT AND SPECK are characterized by small, dark, raised spots on the fruit and dark, greasy-appearing spots on the leaves.

BACTERIAL CANKER is characterized by brown, sunken streaks on stems which crack open. Leaves turn brown, wither and die. Fruit spots have dark raised centers with white halos (Figure 4). Sources of inoculum for these three bacterial diseases could include infested seeds, plant debris from the previous year and weed hosts.

Efficacy of Various Fungicides Against Foliar Diseases

	Disease					
Fungicide*	Early Blight	Septoria Leaf Spot	Late Blight	Gray Mold	Leaf Mold	Bacterial Spot, Speck
Actigard						•
chlorothalonil (H)	•	•	•	•	•	
fixed copper (H)	•	•	•			•
maneb or mancozeb (H)	•	•	•		•	
Quadris	•	•	•			
Ridomil Gold Bravo	•	•	•			

*Refer to label for rates and restrictions.

**(H) -- indicates availability for homeowner use.

Control measures for foliar diseases include:

1. Buy certified transplants, or grow your own in sterilized soil or commercial potting mix.
2. Use long rotations (three or four years) with grain crops.
3. Do not plant tomatoes next to Irish potatoes.
4. Destroy (do not compost) tomato vines immediately after harvest. Commercial fields should be disked and the debris allowed to sun-dry several days before turning.
5. Black plastic or organic mulches can delay the onset of early blight, but only if combined with raised beds.
6. Home gardeners can escape the yield-reducing effects of early blight with sequential plantings. Older plants are discarded when defoliation becomes severe.
7. Follow a regular spray schedule using a fungicide with early blight activity. Refer to the table for the diseases controlled by each fungicide. Make the first application soon after transplanting and continue at seven- to 10-day intervals until the completion of harvest. During periods of rainy weather, the spray interval may need to be shortened to five days. Do not apply maneb or mancozeb within five days of harvest.

If bacterial spot, speck or canker appear, the only effective materials for control are the fixed coppers. Maneb or mancozeb improve the effectiveness of fixed coppers when tank-mixed.

Thorough coverage of plant surfaces is needed for effective disease control. Fungicides should be applied with hollow-cone nozzles, using pressure sufficient to penetrate the leaf canopy. Fungicides applied with boom-type, drop-nozzle sprayers should be applied in about 40 gallons of water per acre (gpa) early in the season, increasing gradually to 150 gpa in late season. Fungicides applied with backpack mist blowers can be applied in one-third the water volume used with boom sprayers.

Figure 2. Defoliation caused by early blight.

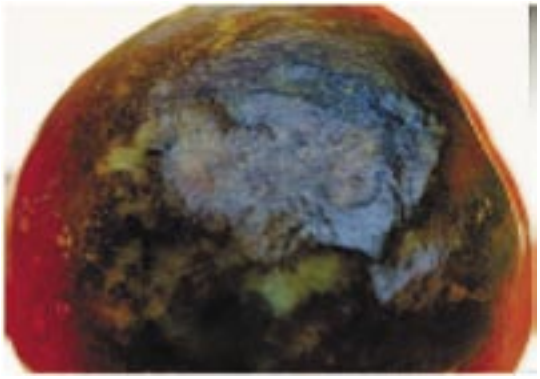

Figure 3. Fruit rot caused by late blight.

Figure 4. Fruit lesions caused by bacterial canker.

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer Statement

Pesticides recommended in this publication were registered for the prescribed uses when printed. Pesticide registrations are continuously being reviewed. Should registration of a recommended pesticide be cancelled, it would no longer be recommended by the University of Tennessee.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others, which may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product.

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