

Tomato disorder: Post-harvest fruit diseases

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Even though symptoms may not appear until after harvest, many of the disease-causing organisms that cause fruit rot infect the fruit before it ripens. Once fruit is infected, little can be done during harvest or storage to reduce the damage. Most fruit rot fungi and bacteria also cause foliar diseases, so management throughout the season is critical not only to produce a healthy plant and high yield, but also to provide high-quality fruit.

Not all fruit damage is caused by diseases. Environmental factors such as calcium deficiency or poor fertilization may also blemish fruit. For a description of some of the most common problems, see Extension publication *Tomato Disorder: Physiological Fruit Problems* (A3798).

Alternaria

(fungus *Alternaria alternata* f.sp. *lycopersici*)

What to look for: On green fruit, the disease is called “freckle” and appears as small, slightly sunken specks surrounded by a yellow halo. The lesions enlarge to about $\frac{3}{4}$ inch across and are often dark with concentric lighter rings. Once the fruit ripens, the lesions stop expanding. Fruit spots are not always obvious at harvest, but develop 3–5 days after harvest.

On fruit that’s infected while ripe, the disease is called “black mold.” Such fruit develops large, sunken, black lesions that may affect up to a third of the fruit.

Symptoms often appear on the side of the fruit that is exposed to the sun.

Severity: Alternaria is rarely severe.

How it spreads: The disease overwinters on decaying plant debris and is spread by wind and splashing rain.

What you can do: Plant resistant cultivars.



Alternaria

Anthracnose

(commonly caused by the fungus *Colletotrichum coccodes*)

What to look for: Infections occur while fruit is young, although symptoms don't appear until after fruit begins to ripen. Lesions are circular, $\frac{1}{2}$ inch in diameter, and slightly sunken. The tissue beneath the lesions is grainy and lighter in color than the surrounding healthy tissue. The center of the lesion often contains small black specks. Secondary infections by yeast and soft rot are common.

Severity: Anthracnose can cause serious fruit losses if not controlled.

How it spreads: The fungus is seedborne, but may also overwinter in the field on infected debris. Overhead irrigation and wet weather worsens the disease.

What you can do: Discard infected tomatoes promptly. It is important to use clean seed and practice crop rotation out of solanaceous crops for 2–3 years. Improve air circulation by staking or caging plants, and allow adequate plant spacing. Fungicides applied to prevent Septoria leaf spot will also protect fruit from anthracnose. Begin treatments when plants start to bloom and continue every 7–10 days until harvest.



Anthracnose

Bacterial speck

(*Pseudomonas syringae* pv. *tomato*)

What to look for: Tiny, slightly raised, superficial black specks that are less than $\frac{1}{16}$ inch in diameter. A darker green ring often surrounds the lesions.

Severity: Bacterial speck reduces yield through cosmetic injury. If leaves are also infected, yield losses increase to 25%.

How it spreads: This is a cool-weather disease that occurs when temperatures remain between 55–77°F with high humidity, heavy dew, or frequent rainfall. The pathogen overwinters in the field on infected plant debris. It may also be transmitted on infected seed.

What you can do: Use clean seed. Irrigate early in the day to promote rapid drying. Practice crop rotation and sanitation to reduce exposure of the current season's fruit to last season's inoculum. Fixed copper fungicides that are used to control foliar symptoms of this disease will also help to protect the fruit. For more details, see Extension publication *Tomato and Pepper Disorders: Bacterial Spot and Speck* (A2604).



Bacterial speck

Bacterial spot

(*Xanthomonas campestris* pv. *vesicatoria*)

What to look for: Small lesions (about 3 mm in diameter) are slightly raised and scabby. When lesions are first forming, symptoms are similar to bacterial speck. For more details about both diseases, see Extension publication *Tomato and Pepper Disorders: Bacterial Spot and Speck* (A2604).

Severity: Bacterial spot is rarely a serious disease on fruit.

How it spreads: Infection occurs during warm, wet weather. The pathogen overwinters on infected plant debris or on seed.

What you can do: Use clean or treated seed and rotate out of tomatoes for at least 2 years. Protectant copper sprays will reduce likelihood of bacterial spot.



Bacterial spot

Botrytis gray mold

(fungus *Botrytis cinerea*)

What to look for: Gray, velvety coating on flowers, fruit, and leaves. Dying flowers are particularly susceptible. Infection spreads to the fruit when infected flowers come in contact with them. Infected green fruit develop circular, whitened areas with distinct rings called ghost spots. During warm, sunny weather, disease development stops, with only the ghost spots remaining.

Severity: Botrytis gray mold causes moderate damage on tomatoes.

How it spreads: The fungus is everywhere and affects many species of plants. It overwinters as sclerotia (spores) in the soil or on any of the many perennial hosts in nature. Cool, wet weather worsens disease symptoms.

What you can do: Improve air circulation and speed drying through proper spacing and by staking or caging plants. Fungicides can be used to prevent the spread of infection.

Buckeye rot

(fungus *Phytophthora parasitica*)

What to look for: Fruit symptoms begin as gray-green or brown, water-soaked lesions. The spots develop concentric rings as they enlarge, eventually covering as much as half of the fruit. Lesions are often leathery in texture. Tomatoes infected before they mature often remain firm and green. Infections that occur later result in uneven fruit ripening.

Severity: Buckeye rot is rarely a serious problem in Wisconsin.

How it spreads: Fruit that comes into contact with the soil is most likely to become infected. Splashing rain can also spread the pathogen. The fungus overwinters in infected plant debris.

What you can do: Plastic mulch will prevent the fruit from touching the soil, reducing the likelihood of infection. Likewise, staking or caging plants keeps the fruit off the soil surface and reduces losses to this disease. To reduce the buildup of fungi, rotate out of solanaceous crops (tomatoes, peppers, eggplants) for at least 3 years.



Buckeye rot

Early blight(fungus *Alternaria solani*)

What to look for: Early blight commonly affects both fruit and foliage. Initially, lesions on fruit are black or brown and firm. Although the fungus enters through the stem end, lesions can occur anywhere on the fruit and can become quite sizeable and leathery.

Severity: The disease may destroy up to half the crop.

How it spreads: Early blight develops best during cool, humid periods. The fungus overwinters in the soil on infected plant residue and can remain viable for at least one year.

What you can do: Plant disease-free seed and practice a 2–3 year rotational sequence. Fungicides are available to commercial growers for control of both foliar and fruit infections. Extension publication *Commercial Vegetable Production in Wisconsin* (A3422) lists current recommendations.

**Early blight****Late blight**(fungus *Phytophthora infestans*)

What to look for: Greasy, greenish-brown fruit lesions are characteristic of this disease. Fruit infections usually begin on the shoulders as the spores are washed from the foliage above. The spots may enlarge until the entire fruit is covered. The fruit may remain firm or may soften as the disease spreads into the fruit.

Severity: This disease occurs sporadically in Wisconsin, but can be serious when present.

How it spreads: Late blight is more severe in cool, wet years. The fungus is spread by wind and overwinters on infected plant debris or cull piles of tomatoes or potatoes.

What you can do: Practice a 2–3 year rotation out of solanaceous crops. Destroy infected plants immediately, including any potato tubers. Copper fungicides may be used as a protectant if conditions favor disease development.

**Late blight**

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