

Carrot diseases: Alternaria and Cercospora leaf blights

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Alternaria and Cercospora leaf blights are common fungal diseases of carrot leaves and petioles. While neither disease directly hurts the carrot root, yield loss occurs when petioles become so brittle that they break off during mechanical harvest leaving the carrot in the ground. In warm, moist weather, Alternaria leaf spots develop rapidly so that the entire field may appear to have been injured by frost or chemicals. Crop loss will be more severe when plants become infected early in the season.

Alternaria and Cercospora are difficult to distinguish in the field and often appear on the same plant. The principle difference involves disease timing. Cercospora leaf blight, caused by the fungus *Cercospora carotae*, attacks young rapidly growing plants; Alternaria leaf blight, caused by the fungus

Alternaria dauci, primarily attacks older plants, although seedlings may also be infected.

Symptoms and effects

With both diseases, small, greenish-brown, water-soaked spots appear on leaves and petioles. Leaf lesions are often surrounded by a diffuse yellow halo. During humid weather, the lower surface of Cercospora leaf lesions turn pale gray and are peppered with tiny black spore-producing structures. As the irregularly shaped lesions increase in size and number, the entire leaflet shrivels and dies, creating a burnt appearance.

Petiole lesions caused by Alternaria become brown and irregular. With Cercospora, they become elliptical with tan centers and brown borders. Eventually, the petiole may be girdled and the leaf killed.

The disease begins in small patches within a field. By the end of the growing season, it will be uniformly spread throughout.

Only one other disease, bacterial blight, has symptoms that closely resemble Alternaria and Cercospora. With bacterial blight, leaf spots are angular rather than rounded and are typically confined between leaf veins.



Peter Rogers, University of Wisconsin

Alternaria and Cercospora may be found on the same plant and are often indistinguishable from each other.



Peter Rogers, University of Wisconsin

Cercospora lesions are usually found on young leaves first.

Disease cycle

The fungi that cause *Alternaria* and *Cercospora* leaf blight overwinter in diseased plant debris and on wild perennial hosts such as Queen Anne's lace. The fungi can survive in debris for up to 2 years. *Alternaria* and *Cercospora* may also be spread on or in contaminated seed—the primary means of transmission to new production areas.

During the growing season, spores are spread by wind, water, and field equipment. Infection requires prolonged leaf wetness, which allows spores to enter through pores in the leaves. Lesions appear 3–5 days later and soon become the source for new inoculum.

Control

Cultural

Alternaria and *Cercospora* are difficult to control, so prevention is the best strategy. The first and least expensive control tactic is to use disease-tolerant varieties. These include Apache, Bolero, Caro-choice, Caropak, Cellobunch, Early Gold, Enterprise, Kuroda, Magnum, Nevis, SugarSnax 54, Sweet Bites, and others. On tolerant varieties, disease appears later in the season and

spreads more slowly. Also, losses are lower and there's less need for fungicide treatments.

Other prevention strategies include purchasing clean seed from a reputable dealer to assure you're not bringing spores into a clean field; irrigating early in the day to allow foliage to dry thoroughly; selecting well-drained sites when planting new fields; incorporating plant debris immediately after harvest to hasten decomposition of infected debris; and following 3-year crop rotations.

Chemical

Each week after crop emergence, randomly collect 50 leaves from the field. If any of the collected leaves have lesions on the leaves or petioles, fungicide treatment should be initiated. Continue to monitor plants weekly to determine the need for additional treatments.

Backyard gardeners can use copper-based fungicides to manage *Cercospora* and *Alternaria* leaf blights. Several additional products are available for commercial growers. For current recommendations, refer to Extension publication *Commercial Vegetable Production in Wisconsin* (A3422). Always follow label directions carefully.

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