



Causes of Leaf Spot Disease: Interaction between Host and Pathogen

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Description

Although a few diseases are brought on by bacteria or other pathogens, fungi cause the bulk of leaf spot disorders. Many diseases are somewhat host-specific and only infect trees belonging to the same family when they are sick. A leaf spot disease, or many, has the potential to affect almost all trees and shrubs. The most prevalent plant diseases in the Northeast and Connecticut are likely leaf spot diseases. Since free water on leaf surfaces is typically required for infection, these diseases are most common following rather chilly, wet spring weather. One or more leaf-infecting diseases are hosts to the majority of commonly found ornamental plants and shrubs. Leaf spots can cause considerable and occasionally unsettling premature leaf drop; however, they are typically thought of as more aesthetic than life-threatening issues.

The bacteria *Pseudomonas* and *Xanthomonas* are frequently linked to leaf spots. The most prevalent worms on woody ornamentals are foliar nematodes, or *Aphelenchoides*. Both varieties of lettuce—head and leaf—can develop bacterial leaf spots. The pathogen, *Xanthomonas campestris* pv. *vitians*, is extremely dependent on moist, cool environments for infection and disease development, as is the case with most bacterial illnesses. Small (less than 0.25 inch in diameter) water-soaked leaf spots on the plant's older leaves are an early sign of bacterial leaf spots. These lesions are often angular in shape and surrounded by leaf veins. A symptom of this condition is the rapid blackening of lesions. If the illness is severe, many lesions may come together and cause the leaf to fall off. Older lesions continue to remain black but dry out and change texture to paper. On

newly sprouting leaves, lesions seldom appear. Only when there is rain or sprinkler irrigation do symptoms appear. The germs are spread from plant to plant by the splashing of water from these sources. Although research suggests that commercial seed used in California is largely devoid of the virus, the infection is seed borne. The pathogen may become established on plants during the greenhouse phase of growth, as in the case of transplanted lettuce seedlings. Beetroot, silver beet, sugar beet, and spinach, as well as a number of atriplex and *Chenopodium* weed species, are hosts. Warm, rainy weather is favorable for leaf spots. In general, a period of rainy weather is necessary for severe epidemics. Fungal hyphae penetrate leaf stomata to spread infection from sprouting fungal spores. Spores can disperse mechanically, by irrigation, wind, rain, or snow. It's conceivable that the fungus will spread to fresh crops on infected crop debris.

Infected twigs and fallen leaves are where the organisms that cause leaf spots live. Some may still be present in the tree's dead twigs. In the spring, the most harm happens. Spores may splash or be carried by the wind during rainy weather onto sensitive, freshly developing leaves, where they germinate in the moisture and infect the leaf. Additionally, extended wet periods brought on by overhead irrigation are perfect for the spread of leaf spot infections.

Use the prescribed fungicides, especially in warm, rainy weather. Rotate other non-host vegetables into the beet crop rotation. In and around beet fields, manage weeds, especially *Chenopodium* weeds like fat-hen. For capsicum, specific restrictions are typically not necessary. Plant just top-notch seed don't plant seed that might be *Cercospora*-infected. To minimize the transmission of the illness to succeeding crops, destroy diseased crops as soon as possible after the last harvest and before replanting.

Tolerate the illness. Leaf spots are generally tolerated by trees with little to no obvious damage. An early-year afflicted tree will re-leaf, and the young leaves could not be impacted. Most established plants won't suffer harm unless defoliation occurs three or more years in a row. Eliminate diseased leaves and rotting twigs. By removing spores that can re-infect the fresh leaves, raking up and discarding sick leaves as they fall and cutting out dead twigs can help control the disease. Although it is not a cure, lowering the overall amount of inoculum may help reduce infection. Leave the foliage dry. Avoid watering from above. Use soaker hoses or water in the morning to allow the leaves to dry before dusk. Splashing while watering can potentially transmit the illness. Plants should be pruned to promote optimum air circulation and lessen crowding to keep the leaves dry.

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