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report on
PLANT
DISEASE

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VERTICILLIUM WILT OF STONE FRUITS

Verticillium wilt, caused by the fungus *Verticillium dahliae*, was first reported in 1916. Stone fruit corps commonly affected by this disease are apricot, peach, plum, sweet and sour cherry, and nectarine. The fungus that causes Verticillium wilt of stone fruit crops is a common pathogen of strawberry, potato, tomato, several other vegetable crops, and many weed species.

Symptoms

The first symptom of Verticillium wilt is wilting of leaves on one or more branches in midsummer (Figure 1). Wilting of leaves is followed by yellowing and curling of the leaves and, ultimately, defoliation. Symptoms usually develop first on the lower parts of the shoots and progress upward, leaving a few green leaves at the tip. Some infected branches are killed. Sapwood of affected branches contains streaks of black discoloration (Figure 1C).

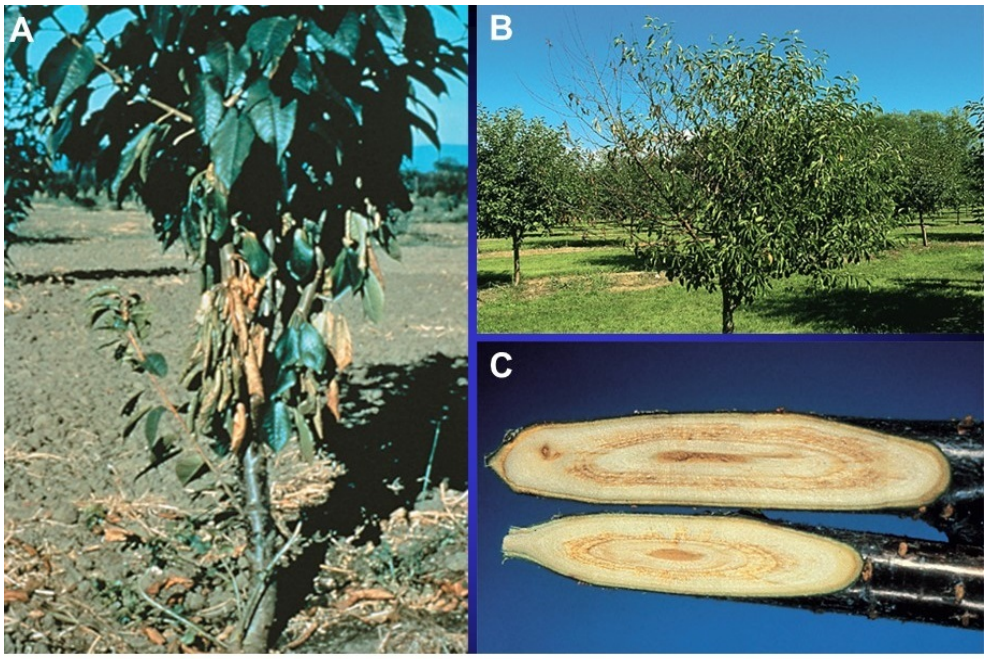

Figure 1. *Verticillium wilt of cherries. A) A tree with wilting of leaves on spurs low in the canopy; B) Defoliation and wilting of lateral branches of a tree; and C) Grayish streaks in sapwood of a sour cherry.*

Life cycle

Verticillium dahliae is a soilborne pathogen and produces surviving bodies (microsclerotia) that survives in the soil for a long time. This fungus can survive at depths of one yard (90 cm), but most microsclerotia are found in the upper 6-12 inches (15-30 cm). Survival of the pathogen in soil is poor

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when temperatures are above 77°F (25°C), whereas flooding also reduces viability. However, survival of microsclerotia for several months to years is common when soil moisture is favorable, even at temperatures of up to 86°F (30°C).

Soil population of the pathogen can build up to very high levels on susceptible weeds such as lamb's-quarter, pigweed, nightshade, and ground cherry; and on such crops as strawberry, raspberry, potato, tomato, pepper, and eggplant.

The fungus can be disseminated in many ways, including by diseased plants that are transplanted, windblown soils, and propagation knives. Following introduction into soil, the pathogen may persist as dormant sclerotia or may increase sclerotial number by infecting other crops or weed hosts.

The pathogen invades plants through the roots of trees and then develops in the vascular systems. Disease increase is more severe in wet soil. Disease development occurs at 70-80°F [21–27°C (optimum 24°C)]. Soil pH has little effect on disease development. In some crops, nutrient deficiency exacerbates disease. Infection occurs early in the spring and is followed by symptom expression in midsummer. Although symptoms may become more sever in late summer, they generally do not appear for the first time during this period. The pathogen may survive from season to season in roots of infected trees.

Disease management

Disease avoidance is the most effective strategy for managing Verticillium wilt. Establishing a stone fruit orchard in potato, tomato, and strawberry fields, and inter-planting orchards with these crops, should be avoided. Excessive irrigation water from adjacent fields with a susceptible crop such as potato should not be allowed to flow into orchard. The orchard should be established in a soil that has low or undetectable inoculum densities and that has been cropped to various grasses or other nonhost. There are no Verticillium-resistant rootstocks. Soil fumigation with chloropicrin is reported to control soil-borne inoculum.