

Verticillium Wilt on Woody Landscape Plants Identification, Biology and Management

Verticillium wilt is a vascular disease that affects **many woody trees and shrubs, herbaceous ornamentals, weeds, vegetables, and agronomic crops**. Among shade trees, **maples** are particularly susceptible and hence the name "Maple Wilt" often has been applied to this disease by arborists.

SYMPTOMS: Initial symptoms usually are visible as sudden wilting, browning, and shedding of leaves on one branch or one area of the crown. These symptoms may spread gradually throughout the crown (Fig. 1). Severely affected trees may eventually succumb to the disease. Delayed

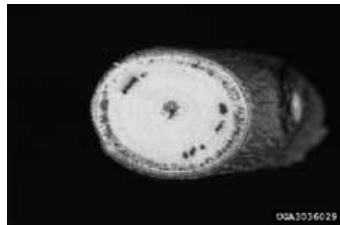


Fig. 2—Sapwood staining

budbreak, sparseness of the crown, reduced twig growth and early fall coloration frequently are associated with chronic forms of the

disease. Affected trees or areas of the crown may fail to leaf out in the spring.

Internally, the sapwood in symptomatic branches and in the roots and lower

bole usually exhibits a distinct discoloration (Fig. 2). The discoloration usually is not contiguous around the entire ring of sapwood, but occurs as streaks varying from green to brown to nearly black.



Fig. 1—Verticillium wilt on maple

CAUSAL AGENTS: Verticillium wilt is caused by two species of fungi; *Verticillium albo-atrum* and a related species *Verticillium dahliae*. The fungi are soil inhabitants that are capable of surviving long periods in the soil. The fungi can also survive in roots of both susceptible and non-susceptible plants. Infection occurs primarily through wounds in roots or branches, or possibly by direct penetration of healthy roots. Following infection, the fungi colonize the vascular system, which interrupts translocation of water and nutrients, resulting in wilt symptoms.

Resting structures of *Verticillium* spp. are disseminated by flowing water such as irrigation water, infested soil, and also may be windblown for considerable distances. Contaminated pruning tools may be responsible for new infections.

CONTROL: Verticillium wilt on woody ornamentals in the landscape can be minimized by maintaining plant vigor through periodic fertilization, pruning, and irrigation during dry periods. Avoid planting susceptible ornamentals adjacent to vegetable gardens and agricultural fields or in areas where these crops were once grown. Do not replant a susceptible species where a previous planting has succumbed to the disease. Branches that have died from Verticillium wilt should be removed. When feasible, prune back affected limbs and branches beyond the last observable evidence of sapwood staining. Disinfect tools with a dilute liquid bleach or alcohol solution before pruning healthy trees. Plants seriously declining from Verticillium wilt usually do not respond to therapeutic treatment and removal may be necessary.