

Verticillium Wilt

Verticillium dahliae



Host Plants

- Azalea
- Barberry
- Boxwood
- Buckeye
- Camellia
- Elm
- Euonymus
- Goldenraintree
- Lilac
- Magnolia
- Maple
- Nandina
- Photinia
- Redbud
- Rose
- Smoketree
- Tulip poplar
- Viburnum

Introduction

Verticillium wilt is an important disease in nurseries and landscapes. This disease affects hundreds of species of shade and ornamental trees, causing many symptoms including decline and death.

Pathogen and Disease Cycle

In the Southeast, verticillium wilt is most often caused by *Verticillium dahliae*, which is a soil-borne fungus. This fungus can live in the soil for many years, having a long-term effect on production. The infection typically spreads through the root system but can infect plants aboveground if wounded plant tissue is exposed to spores (conidia) via wind, equipment or workers. The fungus can be spread in cuttings and scionwood. The fungus grows best when temperatures are between 70 and 85 degrees F; however, symptoms are first noticeable during hot and/or dry weather.

Monitoring

The first symptoms usually occur during periods of drought and high temperatures in June, July and August. Initial symptoms are characterized by sudden foliage wilting and drying on one or a few branches. Foliage may curl up and turn yellow, red or brown. Prolific sucker growth can occur on infected plants. A positive diagnosis can only be made by isolating the fungus from discolored sapwood.

Symptoms



This disease blocks water movement from the roots to the foliage, which causes the leaves to wilt and die. Sudden wilting and leaf death on one or a few branches characterize the initial symptoms. Water-conducting tissues in the roots, trunk and major limbs will turn green, brown or black when infected. This is visible when the bark is shaved away, exposing the sapwood. Some plants will die quickly, while others may take years to die.

Integrated Pest Management

CULTURAL CONTROL

Prune out dead and dying twigs and branches. Plant resistant species and cultivars such as beech, birch, chestnut, flowering crabapple, cypress, dogwood, fir, firethorn, ginkgo, hawthorn, hackberry, hornbeam, juniper, larch, linden, honey locust, mountain ash, mulberry, oak, pawpaw, pear, pecan, poplar, pine, flowering quince, rhododendron, spruce, sweetgum, sycamore, walnut, willow, yew and zelkova.

CHEMICAL CONTROL

Please refer to http://eppserver.ag.utk.edu/redbook/sections/trees_flowers.htm for the most up-to-date recommendations.

Resources

Photo credits: Amy Fulcher, University of Tennessee

Hartman, J. Verticillium wilt of woody ornamentals. University of Kentucky Extension publication PPA-18.

<http://www.ca.uky.edu/agc/pubs/ppa/ppa18/ppa18.htm>

Olsen, M. 2011. Verticillium wilt. University of Arizona Extension publication AZ1034. <http://ag.arizona.edu/pubs/crops/az1034.pdf>

Sinclair, W. and H. Lyon. 2005. Diseases of trees and shrubs. 2nd ed. Cornell University Press.

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