



Kramer Tree Specialists, Inc. - "Complete Professional Tree Care"

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Pine Wilt

The first documentation of nematodes causing damage to conifers was made in 1934. Not much research was done until forty-five years later, when the nematode pathogen causing pine wilt disease was rediscovered. Currently, the Midwest has the highest incidence of pine wilt in the United States. Stressed conifers that are not native to North America and older trees (over ten years of age) are most susceptible to pine wilt. Scots pine is most susceptible to the disease. Austrian, jack, mugo, and red pine are occasionally killed by pine wilt, while white pine are less commonly afflicted.

Symptoms

Needles quickly change from their normal color to grayish-green and finally to tan or brown. Tree death, usually progressing from the top of the tree downward, combined with dead needles that cling to the branches, help distinguish pine wilt from other needle diseases. In some situations, the entire tree can turn brown all at once. Pine wilt is a dramatic disease that can kill a tree within a few weeks to a few months. To a homeowner, it may appear that the tree died overnight.

Life Cycle

Pine wilt is caused by the microscopic pine wilt nematode; however, several organisms are involved in the process. Sawyer beetles lay their eggs in dead or dying pine trees. The eggs hatch into larvae which overwinter in the pines. The nematodes infect beetles before they emerge from the dead pine. The beetles then carry the nematodes to live pine where the nematodes enter the tree through the feeding wounds. Once inside the tree, the nematodes feed, multiply rapidly and spread throughout the tree. Their feeding habits cause the tree's water-conducting system to become clogged, stopping resin flow and inducing the development of wilt symptoms, and the tree dies. Dying pine attract egg-laying pine sawyer beetles as well as pine bark beetles. As bark beetles bore into dying pine, blue-stain fungi living in the beetles gain entry into the pine. Blue-Stain fungi rapidly colonize wood in dying conifers. Pine wilt nematodes thrive on a diet of these fungi, allowing the nematode population to multiply even faster. Sawyer beetles attracted to dying trees lay eggs under the bark; the sawyer beetle life cycle continues.

Management

Many harmless species of nematodes feed on bacteria and fungi. Microscopic analysis by a Nematologist is necessary to determine if the nematodes present are harmful. A trunk injection of abamectin applied in spring will give two years of prevention. Infected trees should be destroyed to reduce reservoirs of infection. The beetle is a strong flyer that feeds all summer long. Spraying to protect trees all summer is impractical. Do not save wilt-killed pine as firewood; beetles can continue to emerge from the logs. Prune dead branches from live, uninfected trees to minimize the attraction of feeding beetles. Pine trees should be kept from stress situations by controlling other diseases and insects. Provide water during extended dry periods of more than one week without rainfall. Plant less susceptible conifers, such as Norway or blue spruce, Douglas fir, cedar, or hemlock, or deciduous trees in locations where pinewood nematodes have been a problem.

