



## DUTCH ELM DISEASE

Dutch Elm Disease (DED) is caused by a wilt fungus that infects elm trees. These trees develop clogged water-conducting tissues (xylem) in branches and trunks, and nearly all infected elm trees die of the disease. The fungus, *Ophiostoma ulmi*, is spread primarily by elm bark beetles. The beetles spread the fungus when they fly from diseased trees to feed or lay eggs on other elms. Fungal spores cling to the insects and are transferred from tree to tree. The disease can also spread through root grafts that occur naturally when elms are planted within 50 feet of each other. Roots from a diseased tree fuse with roots of a neighboring elm forming a common root system capable of transferring the infection.

European and native elm bark beetles enter dead or dying elm trees to breed and lay eggs. They may fly several miles to find these trees. In the spring, emerging adults carry the disease fungal spores on their bodies and infect other elms when they feed in the V-crotches of small branches and twigs. The fungus enters the xylem tissue and spreads rapidly through the tree during spring and early summer.

Outward symptoms of the disease are wilting and yellowing leaves followed by early defoliation. Clusters of affected foliage, known as flagging, appear initially on single limbs but later over the entire tree. Infected sapwood shows brown streaking, especially in the current season's growth. The disease can spread rapidly throughout a tree, killing it within one year.

The best method of control is the rapid detection and removal of dead or diseased trees. The wood should be burned, buried or mechanically chipped. Once chipped, the disease cannot spread and poses no threat to healthy elms. Chipped elm wood can be used as mulch or composted. Do not save branches or logs for firewood unless the bark is removed entirely. Contaminated elm bark beetles remain alive in logs with intact bark. For non-infected elms, maintaining tree health with supplemental watering and fertilizing is very important in disease management. Monitor elms for DED frequently. Prune out dying branches promptly and run them through a chipper.

Chemical applications are limited to protecting non-infected trees. Insecticide treatments applied to healthy trees before beetles emerge from diseased trees in spring are effective only with thorough coverage of all small twigs where beetles feed. Pressurized fungicide injections are expensive annual treatments and require specialized equipment. Only professional arborists or pest control companies should do these procedures.

All species of elm are susceptible to the disease. Native elms, particularly the American Elm (*Ulmus americana*), have suffered the greatest losses. Siberian Elm (*Ulmus pumila*) and Chinese Elm (*Ulmus parviflora*) are not seriously affected. Most of the elms growing in the Inland Northwest are Siberian or Chinese Elm, and unfortunately, these Asian elms are not desirable as landscape trees. Much research has been done to develop disease-resistant cultivars of desirable elms. Trees other than elms are not affected by DED.

DED was first detected in Holland by a Dutch scientist prior to 1920. It arrived in the eastern U.S. in the 1920's on beetle-infested elm logs and shipping crates made of elm wood. It has slowly spread westward to the Pacific coast. Over 75% of elms in the northeast and midwest and over 55% of elms in the entire U.S. have died from DED. Community tree programs that encourage detection, removal and prevention of DED and replacement with acceptable tree species have limited losses of existing elms to 5% or less each year in some areas.

Do not confuse the damage caused by elm leaf beetle with symptoms of Dutch Elm Disease. Elm leaf beetle is a common pest on all elms in this area, particularly on the Siberian Elm. Both larvae and adult Elm leaf beetles feed on foliage, but do not carry the disease spores. Leaves riddled with holes turn brown and usually fall prematurely in the heat of summer.

---