



Dutch Elm Disease: The Basic Facts

What is the cause of Dutch Elm Disease

Dutch Elm Disease is caused by an aggressive fungus (*Ophiostoma-ulmi*) that kills elms regardless of their health. It is considered the most costly shade tree disease ever and will remain active in a community as long as there are susceptible trees. The fungus invades the water transporting vessels and produces toxins to which the tree reacts. In defense to the toxins the tree produces gums and internal growths designed to block the advance of the fungus. The combination of the toxins and the defense mechanisms of the tree inhibit water flow to the crown, which causes wilting and tree death.

How does Dutch Elm Disease spread?

Female elm bark beetles lay their eggs beneath the bark of dead and dying elm trees. If the elm is infected with Dutch Elm Disease the newly hatched beetles will emerge from the tree carrying the deadly fungus on their bodies. The beetles fly to healthy trees to feed on 2-4 year old branches and thereby spread the disease.

➤ 2-3 generations of elm bark beetles hatch each year

➤ Thousands of beetles may hatch from a single tree

Besides beetle transmission, Dutch Elm Disease may also spread through grafted roots. When elms grow in close proximity to each other, their roots can come into contact and graft together. This common root system provides the fungus with a pathway to spread through an entire stand of healthy elms very quickly.

What are the symptoms of Dutch Elm Disease?

Dutch Elm Disease symptoms begin to develop 4-6 weeks after infection. The first noticeable symptom that results from the fungal occupation of the water conducting vessels is wilting or "flagging" of one or more branches, usually starting at the branch tip. Leaves on infected branches turn dull green to yellow, curl, and become dry and brittle. As the infection spreads the wood beneath the bark displays a brown discoloration.



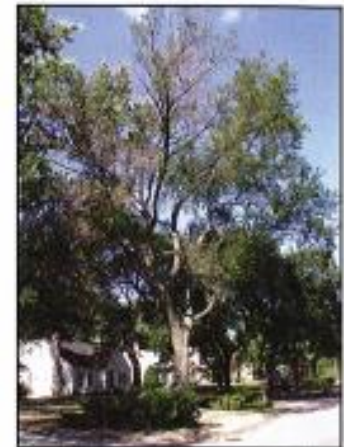
Flagging - a grouping of yellow or wilting leaves is an early sign of Dutch Elm Disease



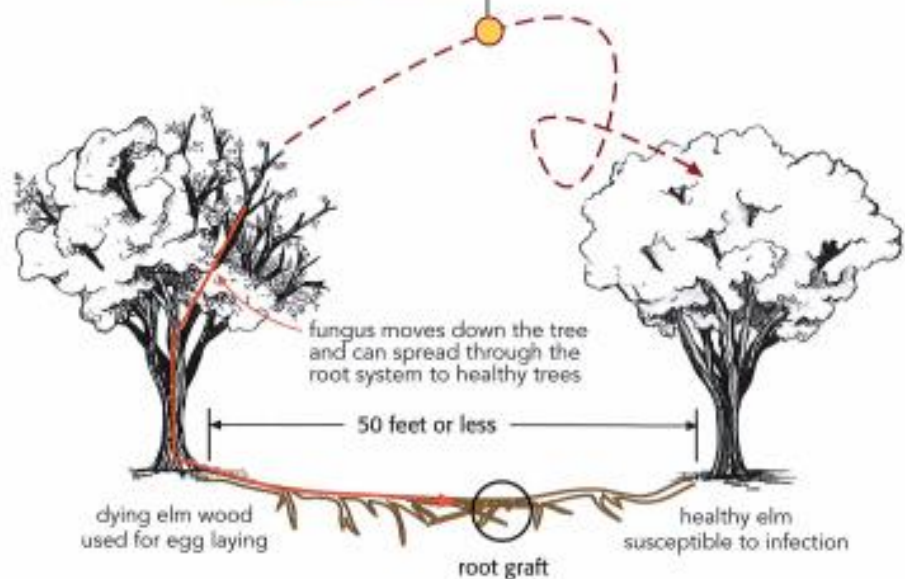
The Dutch Elm Disease fungus is carried to healthy elms by insects.



The most common method of transmission of Dutch Elm Disease is on the bodies of the elm bark beetle.



Dutch Elm Disease continues to kill thousands of trees each year throughout our communities.





Dutch Elm Disease: Protection

What can I do if my tree is already infected?

Most infected elms cannot be saved. In rare cases, if the fungus has not moved into the root system, physically cutting out the infected portions of the tree, with a process called tracing, can save the elm.



Sanitation

Sanitation is the most important tool for controlling Dutch Elm Disease on a community-wide basis. It involves identification and removal of diseased elms. Such practices eliminate beetle breeding sites and reduce the number of disease carrying beetles.



How can I protect my Elm tree?

The goal when protecting elms from the Dutch Elm Disease fungus is to evenly and completely distribute a fungicide chemical throughout the entire canopy of the tree.

- ▶ To protect a tree from beetle-transmitted fungal infection, Arbotect (an EPA registered fungicide), must be evenly and completely distributed throughout the 2-4 year old branches.
- ▶ The only way to get even distribution is by macro-infusion of a large volume of solution into the root flares of the tree.
- ▶ Arbotect is a fungicide that protects elms from beetle-transmitted infection, and is the only fungicide that provides three growing seasons of protection.
- ▶ Arbotect does not protect elms from root graft infection.



Typical application time is 60 to 90 minutes.



Arbotect® Macro-Infusion System provides three growing seasons of protection from Dutch Elm Disease.

Scientifically proven and field tested

Arbotect has been shown through research to be effective for the protection of elms from Dutch Elm Disease by the University of Minnesota and the State University of New York. Arbotect alone has the unique ability to move into newly formed sapwood, while resisting degradation resulting from cold, heat, and other adverse conditions. More arborists and tree care companies across the United States reach for Arbotect fungicide, in the battle against Dutch Elm Disease, than any other product. It keeps saving elms year after year. Nothing else comes close.