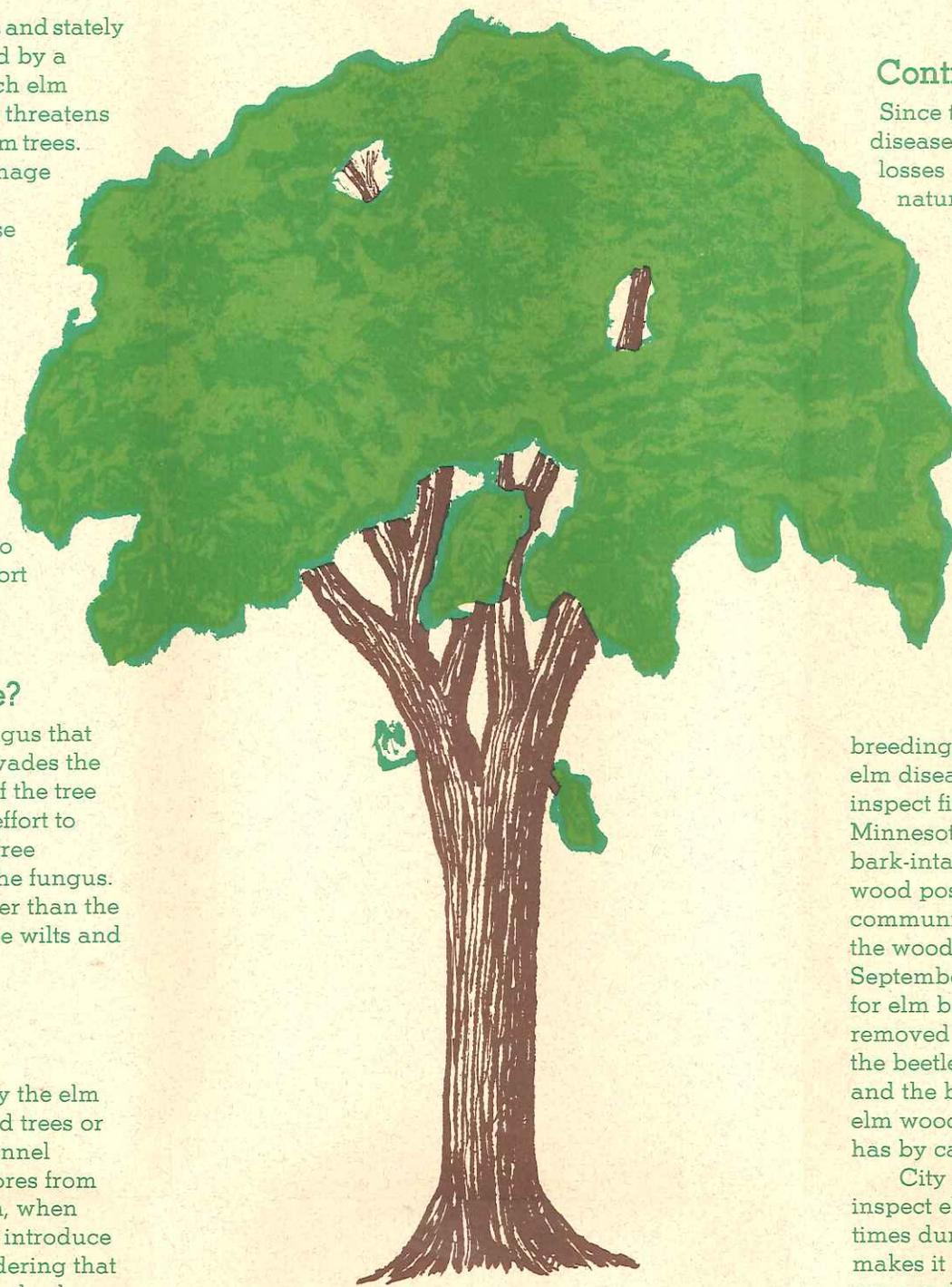


Trees are unquestionably a major contributor to our quality of life. Besides beauty, our trees provide us with many practical benefits such as shade from summer sun, protection from winter wind, habitat for wildlife, reduced air and noise pollution, added privacy and increased property values.

One of Minnesota's most populous and stately tree species — the elm — is threatened by a disease of epidemic proportions. Dutch elm disease. Left unmanaged, this disease threatens to kill nearly all of our communities' elm trees.

Fortunately, we know how to manage this disease. Many Minnesota communities have brought the disease rate under control. By keeping the disease incidence low, communities can spread tree removal costs over many years. In addition, this buys time to smooth the transition from elm lined streets to an urban forest with a healthy mixture of tree species.

Because of its epidemic nature, controlling Dutch elm disease is a community concern. While individuals acting alone can do little to stop the disease, a community-wide effort can significantly reduce tree loss.



### What Is Dutch Elm Disease?

Dutch elm disease is caused by a fungus that affects all elm species. The fungus invades the water and nutrient carrying system of the tree and partially clogs its vessels. In an effort to isolate the invading fungus, the elm tree produces substances that surround the fungus. Unfortunately, the fungus moves faster than the tree's defense mechanism and the tree wilts and dies.

### How Does It Spread?

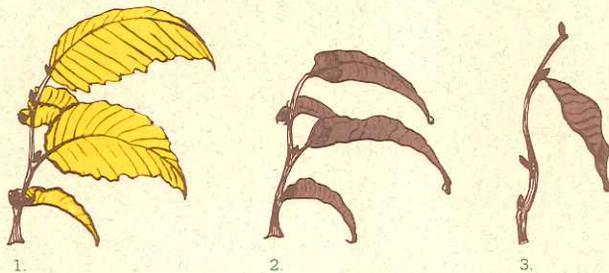
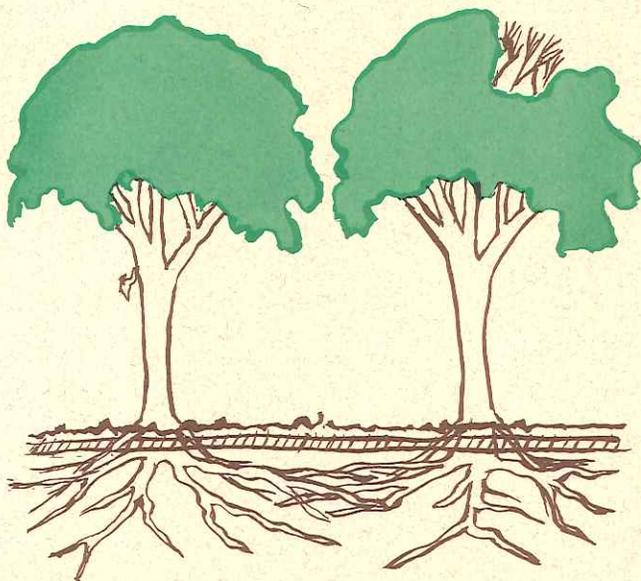
The fungus is spread inadvertently by the elm bark beetle when it flies from diseased trees or logs to healthy trees. When beetles tunnel through infected wood, the sticky spores from the fungus cling to their bodies. Then, when they fly to a healthy tree to feed, they introduce the fungus to yet another elm. Considering that a single infected fireplace-size log can harbor up to 1,500 beetles and these beetles can fly up to three or four miles, the disease can spread rapidly.

People are also responsible for spreading the disease when they transport diseased wood to other localities.

Once the fungus has spread to the roots of a tree, it can pass to adjacent elms through roots which have grown together and connect the trees. When the crowns of mature elms are touching, it is a sign that root grafting may have occurred.

### How To Identify Dutch Elm Disease

The first evidence of the disease is wilting of one or more branches. Leaves on the affected branches turn dull green to yellow, and then curl. Later they become dry and brittle and turn brown. Some trees die several weeks after infection, while others wilt slowly and survive for a year or longer. Peeling bark from wilting twigs often reveals brown or blue-grey streaks in the otherwise cream-colored wood.



Stages of Wilting

### Controlling Dutch Elm Disease

Since there is no positive cure, preventing the disease from spreading is the best way to keep losses to a minimum. Because of the epidemic nature of the disease, prevention is effective only if organized on a community-wide basis.

Many Minnesota communities operate a Dutch elm disease control program. Participating communities receive grants from the Shade Tree Program in the Minnesota Department of Agriculture to cover part of the costs of controlling Dutch elm disease and oak wilt, as well as planting new trees. The rest of the money comes from local tax revenues or special assessments. For more information about your community's program, call city hall or the park board and ask for your tree inspector or city forester.

Since bark-intact elm wood is a breeding place for the beetles that spread Dutch elm disease, community officials routinely inspect firewood stacks for elm wood. In many Minnesota communities it is illegal to store bark-intact elm wood because of the threat this wood poses to healthy elms. In other communities, elm with the bark still attached to the wood may be stored only between September 15 and April 1 (the dormant period for elm bark beetles). Elm wood with the bark removed does not threaten healthy elms, since the beetles can breed only between the wood and the bark. You can find out which type of elm wood storage ordinance your community has by calling city hall.

City foresters or tree inspectors routinely inspect elms for Dutch elm disease at least three times during the summer. Frequent inspection makes it possible for communities to detect and remove diseased trees before they threaten to spread the disease to healthy elms. Failure to promptly remove diseased trees leads to a higher beetle population and more dead elms.

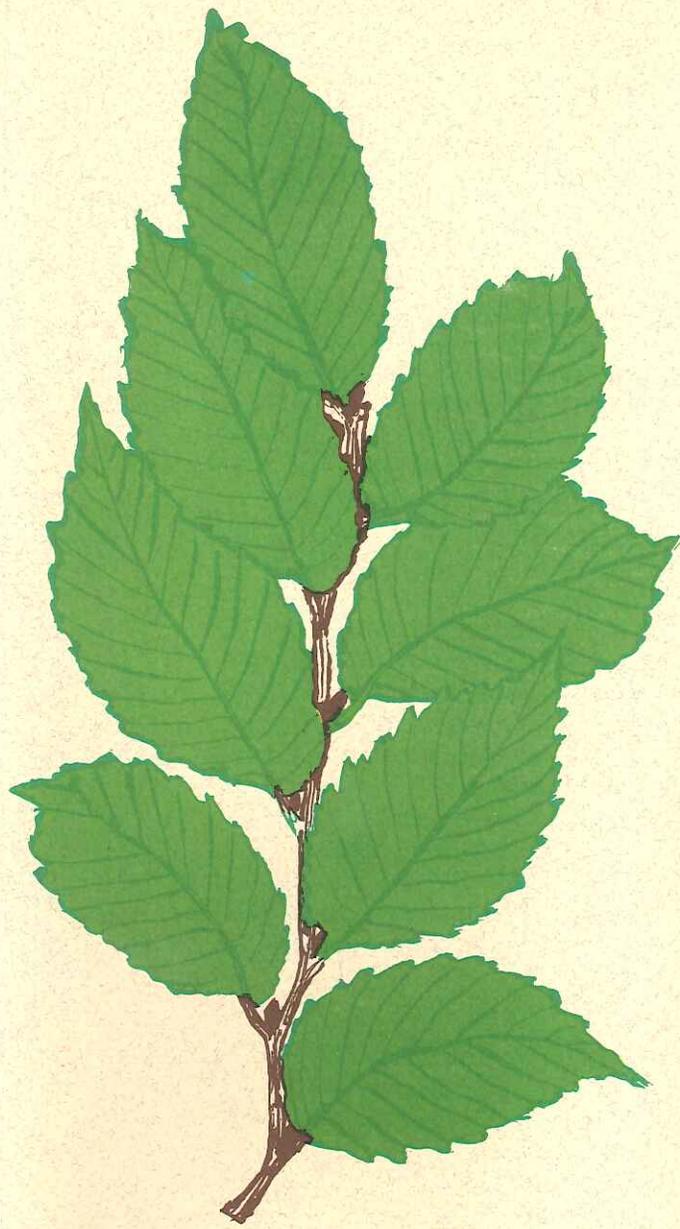
### What Can I Do?

City foresters can inspect your boulevard or private property elms, but not as often as you can. When you see an elm with wilting or yellowing leaves, call city hall and ask your tree inspector to check the tree for Dutch elm disease. Remember, the best way to protect healthy elms from Dutch elm disease is by prompt identification and removal of diseased trees.

You can also assist your local disease control program by helping to eliminate beetle breeding sites. Don't store bark-intact elm wood or allow dead branches to remain on elm trees.

You can make another important contribution to your urban forest. Plant a tree on your own property. And, be sure to care for your newly planted boulevard tree by watering it and protecting it from abuse.

While there is no proven cure for Dutch elm disease, there is reason for optimism. Today, communities with active disease management programs are losing fewer trees each year. And many communities are planting more trees than they are losing to Dutch elm disease. These two actions ensure that future generations will enjoy the practical and aesthetic benefits that trees bring to us daily.



# Dutch Elm Disease



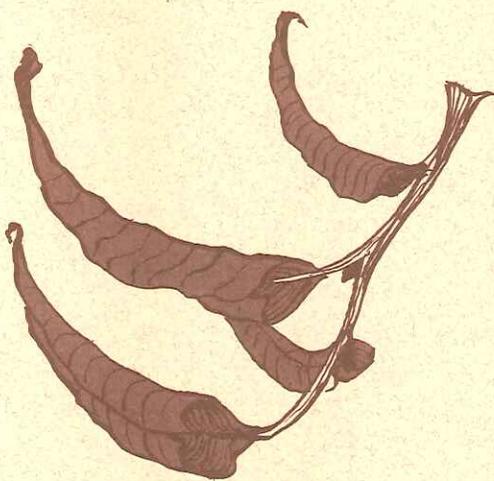
## Shade Tree Program

Minnesota Department of Agriculture  
90 West Plato Boulevard, St. Paul, MN 55107

1. At this earliest stage of Dutch elm disease, leaves begin to droop and curl. Most often the leaves will turn a dull green to a yellow color. Symptoms are usually confined to only one branch. This is known as "lagging".



2. As the disease progresses, curling of the leaves becomes more pronounced and leaves form into a thin cylinder shape. Color is usually yellow to brown. Symptoms spread to more of the branch and leaves begin to fall.



3. Soon afterward, the leaves turn a dark brown and become brittle. The branch is completely dead and a major portion of the tree is usually infected by this stage. Many of the leaves have already fallen.

