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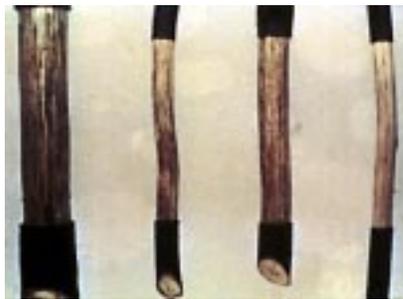
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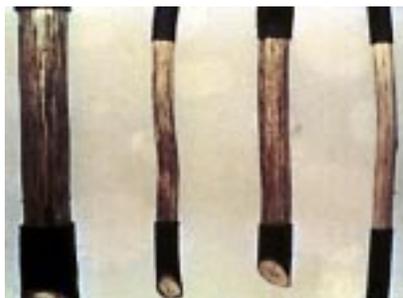
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## Dutch elm disease caused by *Ceratocystis ulmi*

Dutch elm disease primarily affects American and European species of elm, and is a major disease problem throughout most of the range of elm in the United States. The greatest economic loss results from death of high value urban trees.

No fruiting bodies of this fungus are seen in the field. In the laboratory the fungus readily produces easily identified, spore-bearing structures.

Symptoms of the disease include wilting, yellowing, and browning of the leaves, brown or purplish brown streaking of the wood under the bark, and crown dieback. Symptoms normally progress rapidly through the crown. Complete wilting often occurs within six weeks of infection.

The fungus is transmitted to healthy trees in two ways: bark beetles transmit spores from diseased to healthy trees, or the fungus grows through root grafts between diseased and healthy trees. Generally, death of the infected tree is rapid. However, some asymptomatic trees have been found that had been infected for several growing seasons. The specific manner in which the fungus kills trees is unknown. The vascular system of the infected tree is affected, reducing the conduction of water and nutrients.

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