



Hypoxylon canker is a fungus that causes cankers and death of oak and other hardwood trees. The disease is common in East Texas and all across the southern United States. Relatively healthy trees are not invaded by the fungus, but the hypoxylon fungus will readily infect the sapwood of a tree that has been damaged, stressed, or weakened. Natural and man-caused factors that can weaken a tree include defoliation by insects or leaf fungi, saturated soil, fill dirt, soil compaction, excavation in the root zone of the tree, removal of top soil under the tree, disease, herbicide injury, drought, heat, nutrient deficiencies, competition or overcrowding, and other factors. The hypoxylon fungus is considered a weak pathogen in that it is not aggressive enough to invade healthy trees. In addition to the hypoxylon fungus, weakened and stressed trees may become susceptible to a host of other insect and disease pests.

Hypoxylon canker activity usually increases when prolonged drought occurs. When drought stresses trees, the fungus is able to take advantage of these weakened trees. The moisture content of living wood in live, healthy trees is typically 120% - 160%. It is difficult for hypoxylon canker to develop in wood that has a normal moisture content. However, any of the factors listed above could weaken or stress trees causing the moisture content of the wood to reach levels low enough for the hypoxylon fungus to develop. When this happens, the fungus becomes active in the tree and invades and decays the sapwood causing the tree to die. Once hypoxylon actively infects a tree, the tree will likely die.

An early indication that hypoxylon canker may be invading a tree is a noticeable thinning of the crown. Also, the crown may exhibit branch dieback. As the fungus develops, small sections of bark will slough from the trunk and branches and collect at the base of the tree. Where the bark has sloughed off, tan, olive green, or reddish-brown, powdery spores can be seen. Different tree species that are infected with hypoxylon canker will produce the different colors of spores. By the time the spores become visible, the tree is dead. In four to eight weeks, these tan areas will turn dark brown to black and become hard. They have the appearance of solidified tar. After several months, the areas will become a silver-gray color.

Once the fungus invades the tree, the sapwood begins to rapidly decay. Dark decay lines can be seen running through the wood. Trees that have died from hypoxylon canker and are located in an area where they could fall on structures, roads, fences, powerlines, etc., should be removed as soon as possible. During removal, it is very dangerous to climb trees killed by hypoxylon canker. Because the fungus decays the wood so rapidly, the tree may not support the weight of a climber. Instead, use bucket trucks or other mechanical lift devices.

Probably all oak trees are susceptible to hypoxylon canker. In addition, elm, pecan, hickory, sycamore, maple, beech, and other trees may be infected. The fungus spreads by airborne spores that apparently infect trees of any age by colonizing the inner bark. The fungus is known to be present in many healthy trees and can survive for long periods of time in the inner bark without invading the sapwood. As mentioned earlier, when a tree is weakened or stressed, the fungus may then invade the sapwood and become one of several factors that ultimately cause the tree to die.

There is no known control for hypoxylon canker other than maintaining tree vigor. Apparently the spores of this fungus are so common in most areas that removing trees infected with hypoxylon canker is of little value in controlling the spread of the disease. Also, infected fire wood is not considered to be a source of inoculation. The fungus does not kill groups of trees by spreading from tree to tree. There is usually little that can be done to avoid naturally occurring stress factors, but many man-caused stress factors can be avoided. During drought

periods, supplemental watering is recommended, if the tree is near a water source. Damage to tree roots around construction areas commonly predisposes a tree to infection by hypoxylon canker.



Certain species of oak trees are very susceptible to hypoxylon canker. Tan, powdery spores are shown on a water oak soon after the tree died in a Lufkin (TX) park (left). Typical tan hypoxylon spores on a water oak in a Tyler County, TX forest (right).



The hypoxylon canker fungus will exhibit several different color phases after an infected tree has died. Here the fungus has taken on a silver-gray appearance on the bole (trunk) of a young water oak (Lufkin, TX).



Evidence of hypoxylon canker on oak trees can appear black and crusty, similar to dried tar. This stage of the fungus usually appears after the tree has been dead for several months. These black eruptions were found on a dead water oak (Lufkin, TX).



Sometimes several different color phases of hypoxylon canker can be found at the same time on a single tree. This water oak in Tyler County (TX) was a good example.



The hypoxylon canker fungus often causes part of the bark to separate from the tree. These bark chips can be found on the ground at the base of the tree. A water oak in Lufkin, TX displays a classic example of this phenomenon.