

## Hypoxylon: The OTHER Oak Tree Disease

Whenever anyone in this part of Texas thinks of a disease of trees, or just thinks of trees dying, they always think of oak wilt. And with good reason. Oak wilt is probably the proximate cause of the death of more mature oak trees in the Hill Country than any cause, other than man.

But there is another fungal disease, called hypoxylon or hypoxylon canker (*Hypoxylon atropunctatum*) that infects and kills oaks. Both oak wilt and hypoxylon are caused by fungus, both cause a destruction of the vascular tissue of the trees. Red oaks are the most susceptible and quickest to die from both diseases.

That is about where the similarity ends. Oak wilt is a primary pathogen which means it can infect a perfectly healthy host. Hypoxylon is an opportunistic pathogen which means it is always or usually ever-present but only infects the host when the host is stressed.

Oak wilt fungi can travel from tree to tree via interconnected roots and thus can kill many live oaks in an area from a single initial infection. Hypoxylon either never or very seldom moves through the roots from tree to tree, so only individual trees are infected rather than a whole grove. The spores of oak wilt fungus are transmitted to new sites by sap beetles seeking fresh sap on wounded trees. The spores of hypoxylon fungus are airborne and are thus everywhere. Painting wounds on trees probably will not prevent hypoxylon infection.

The consequences of the above characteristics are that most trees in Texas killed by oak wilt are live oaks infected by the fungus moving from an infected tree to a healthy tree through the roots. Red oaks infected with oak wilt usually die quickly but, being less likely to be connected to other trees through their roots, usually only one tree dies. Perfectly healthy trees can become infected with oak wilt.

Hypoxylon, on the other hand usually only kills stressed trees. Stress can come from being watered too much, compacted soil over the roots, fill soil placed over the roots, or, usually, drought. Red oaks appear to be the most susceptible, although all oaks can be infected and indeed, at least in some states, hypoxylon has been found in elms, pecans, sycamores and other trees. I have observed hypoxylon in post oaks and Lacey oaks, but mostly in blackjack and Spanish oaks. Sometimes hypoxylon will be seen on only a single limb or on only part of a tree and it may take a year or two to totally kill the tree. Rarely the tree is not totally killed and may give rise to new growth.

Unfortunately, the symptoms of hypoxylon infection are generally not evident until the tree is mortally infected. The symptom then is sloughing bark down to the cambium and a brown velvet-like coating of spores on the trunk where the bark once was. This brown color usually eventually turns light grey with dark tar-like patches on the bare trunk.

There is no known method to prevent hypoxylon except to keep the tree from becoming stressed by watering during droughts and not damaging the root zone. Like oak wilt, there is no cure for hypoxylon either.

All of the above was brought home to me back in late 2011 and 2012 when I took a walk around a part of our property comprising about 4 acres and counted a half dozen blackjack oaks with hypoxylon, none of which showed any symptoms a year before. The drought of 2011 clearly stressed these trees, some of which lost their leaves that fall. Previously, over the ten-year period prior to 2011, I had only observed about the same number trees with hypoxylon on over 20 acres of woodland-savanna consisting mainly of live oaks, blackjack oaks and post oaks. I continued to find new trees with the disease even into 2013.

If you have a tree showing the signs of hypoxylon, its chances are not good, but I wouldn't be in any hurry to give up on it. I have one tree in our yard that had hypoxylon even before 2011, but parts of it are still alive today. I would give it plenty of time, at least until the next spring or early summer, to put out some new green before I would give up on it. One thing is pretty clear, if you decide that the tree is dead and you cut it down, it certainly will be

Until next time...

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Caption, "A post oak tree showing the classic signs of hypoxylon."