

# Oak Wilt In Wisconsin's Forests

## Biology, Symptoms And Management

### FOREST HEALTH FACT SHEET

Wisconsin Department of Natural Resources, Division of Forestry, Forest Health Program, June 2023

#### Locations

Oak wilt is a deadly disease that affects oak trees. First documented in 1944, oak wilt has since been confirmed in most of Wisconsin's counties (Figure 1).

Oak wilt is widespread and common throughout central and southern Wisconsin; however, the disease remains uncommon in northern Wisconsin (Figure 2).

#### Impact

Oak wilt kills thousands of trees each year in forests, woodlots and urban areas. Oak wilt can even attack and kill healthy trees.

The disease is a particularly serious problem for species in the red oak group such as northern red, northern pin and black oak. Once wilting systems become apparent on a red oak, the infected tree will lose most of its leaves and die within approximately one month.

Among the white oak group, bur and swamp white oaks demonstrate moderate tolerance to the disease, living several years after symptoms first appear. White oaks experience even slower progression of the disease and may live many years with infection.

#### Biology

Oak wilt is caused by the fungus

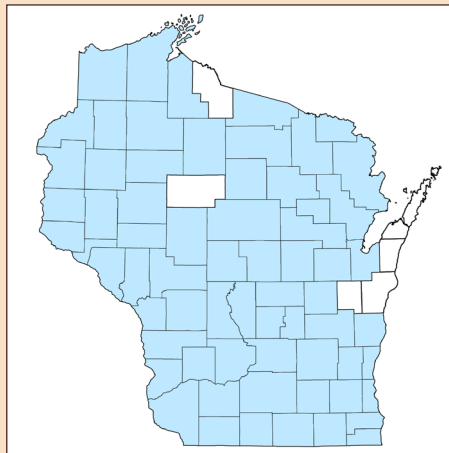


Figure 1: County distribution of oak wilt in Wisconsin.

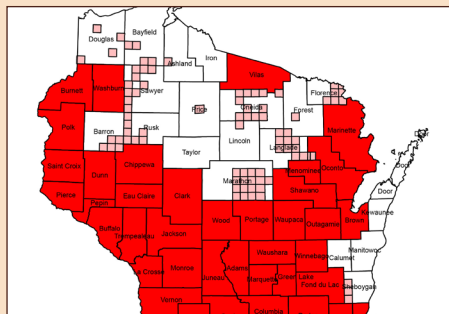


Figure 2: Known distribution of oak wilt in northern Wisconsin. Pink squares mark townships of 36 square miles where oak wilt is present in part. In red counties, oak wilt is common and widespread.

*Bretziella fagacearum*. The fungus grows through the infected tree's water conducting system, causing the tree to wilt and die.

Oak wilt is introduced to an area by sap-feeding beetles that carry oak wilt spores to fresh tree wounds.



Fungal mats produce oak wilt spores and grow underneath the bark of trees killed by the disease.

Spore-bearing fungal mats develop under the bark in the fall or spring following the death of the infected tree. The sap-feeding beetles are attracted to the fungal mat and can transport oak wilt spores to fresh wounds or to recently cut oak stumps.

Once in an area, the disease can spread to nearby oak trees through interconnected (grafted) root systems, creating an expanding pocket of dead oak trees.



Leaves of infected trees will wilt and drop to the ground in summer.

## Identification

Leaves will wilt and drop from the upper canopy first. Symptoms progress down the tree rapidly.

Wilting symptoms are observed from June through September, most commonly in July and August. Leaves of infected trees turn dull green or bronze and look water-soaked.



*Leaves of trees infected with oak wilt turn dull green or bronze and look water-soaked.*

Unlike normal leaf fall, the leaves of infected trees drop to the ground when they are still partially green.

The symptoms of oak are similar to those of other pest, disease and abiotic issues. A symptomatic tree should be sampled and examined by a laboratory for proper diagnosis, especially if active management is being considered.

## Prevention

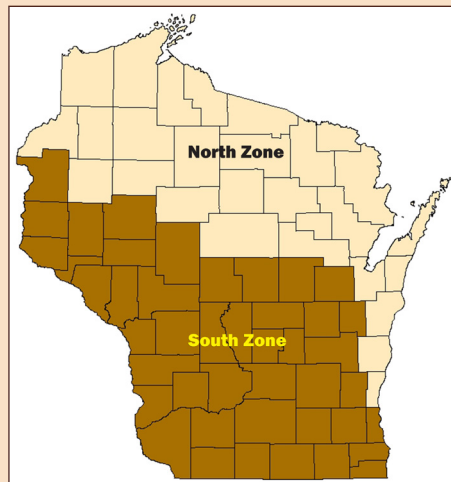
Once the disease exists in a stand, it is difficult to control. **Prevention of this disease is the best approach.** The greatest risk of oak wilt transmission occurs in the spring and early summer, when oak wilt-carrying beetles are abundant and fungal mats are fresh.

To help reduce risk, the DNR has developed a separate [Oak Wilt Management factsheet](#) and [Oak Harvesting Guidelines To Reduce The Introduction And Spread Of Oak Wilt](#). The publications recommend harvesting only during the non-restricted period if your stand is in a county that has oak wilt or is within six miles of a county with oak wilt (*Figure 1, previous page*).

Harvesting-restricted periods are

dependent on your location in the state (Figure 3):

- North Zone: April 15 to July 15.
- South Zone: April 1 to July 15.



**Figure 3:** Map of counties in the north and south Harvesting Restriction Zones.

**Note:** The guidelines include Exceptions and Modifications that allow for stand-level flexibilities. Please read the guidelines for more information at the DNR's [oak wilt webpage](#).

If oak trees need to be pruned during the harvesting restricted periods, apply wound sealer immediately after the wound is made to prevent the introduction of spores by sap-feeding beetles.

## Management

Although management to control the below-ground spread of oak wilt can be complicated and costly, active management can be successful. Controlling below-ground spread requires disrupting the movement of the fungus through root grafts from infected trees to healthy trees.

Physical severing of the root system using a vibratory plow or trencher has proven to be effective if plow lines are placed correctly. Recently, field trials have shown some promising results to contain the below-ground spread of oak wilt by using herbicides on healthy oaks, or uprooting the entire root mass of healthy oaks that border the infected pocket.

Trees that have died of oak wilt will

harbor spores for approximately one year after death. Once root grafts have been disrupted, dead and live trees inside a pocket should be harvested to limit the spread of the disease by beetles.

If you are interested in options for active management of oak wilt, please contact your local [DNR forester](#) or [DNR forest health specialist](#).



*Keep firewood local.*

## Firewood

Moving infected firewood can spread oak wilt long distances to a previously disease-free area. Keep firewood local and consider covering it with 4-mil plastic until the bark is loose. Wood from dead trees with loose bark, and from apparently healthy trees with no wilting symptoms, does not pose a risk for the spread of oak wilt.

Wisconsin has developed requirements pertaining to the movement of firewood. For more information about firewood restrictions, please visit the DNR's [Firewood Rules and Resources webpage](#).



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