

Forest Pest Bulletin



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Wilt: A Possible Threat to our Oak Forests



Bur oak (*Quercus macrocarpa*) is a common tree lining the woody draws across our state. It is also used as a windbreak species and ornamental tree. Bur oaks are regarded as tough trees capable of withstanding our summer droughts and winter cold. They have only a few serious pest problems, two-lined chestnut borer, being the more common. There may be a new threat to our oak stands. Oak wilt, caused by the fungus *Ceratocystis fagacearum* is an oak disease that is similar to Dutch elm disease of elm. It is beginning to appear more common in our state.

The disease was first identified in Wisconsin in 1942 and has long been thought to be native to the Midwestern region of the United States, from Minnesota to Texas and east to Pennsylvania. However, recent evidence indicates the pathogen may have been introduced from further south early in the 20th century. Regardless of its origin, the disease has been recently reported beyond outside of this range. Oak wilt has been occasionally reported in Minnehaha County during the 1980s and 90s... There are reports of oak wilt in western South Dakota and landowners should become aware of the disease though its occurrence is thought to be relatively rare.

Oak wilt is a fungal disease that attacks all oak species that can be grown in our state. The disease is most threatening to members of the red oak group, northern pin oak (*Q. ellipsoidalis*) eastern pin oak (*Q. palustris*) and northern red oak (*Q. rubra*) among others. These trees may die within a year of becoming infected. Members of the white oak group, white oak (*Q. alba*), swamp white oak (*Q. bicolor*) and bur oak, among others, can also become infected though they may survive many years before succumbing to the disease and may even recover. European oaks are generally more susceptible to the disease regardless of whether they are members of the white or red oak group. Asia oaks may also prove to be more susceptible to the disease than the American species.

Oak wilt typically affects small stands of oaks rather than individual trees as the disease spreads through root graft. The symptoms begin in late spring and early summer with the leaves near the top of the tree becoming bronze or tan along their margins. There is usually an abrupt line between the green and discolored leaf tissue.

These leaves may curl or wilt before falling prematurely. Red oak group species often go through these symptoms in a month or two and the infected trees die by that autumn. Species in the white oak group may have only a few branches or a portion of the crown expressing symptoms and these trees may linger for many years before further declining. Infected trees may also have brown to almost black streaking in the outer sapwood. While root grafts are the most common means of transferring the disease from infected to healthy trees, sap-feeding insects and borers can also carry the disease.



Disturbance is a primary contributor to the spread of oak wilt. Native bur oak stands that have had the natural groundcover removed and turned to grass are particularly susceptible to the disease. Soil disturbances, such as changes to drainage or grade, should be avoided within 100 feet of oak stands.

If diseased trees are identified in a stand, these trees should be promptly removed and the wood destroyed. The wood from recently infected trees can be saved as firewood for use on-site as long as the wood is cut and split so that it dries quickly. Moving firewood to other locations is strongly discouraged as there is always the possibility that the wood may still serve as a source for new infections or other pests.

Since the disease spreads by root grafts, cutting trenches between the infected tree and the healthy oaks in the stand can further reduce the spread. Trees within 50 feet of one another can be assumed to be grafted together. Mechanical trenching around infected trees, approximately 5 to 10 feet out from their trunks and to a depth of 4 feet, may retard the spread to other trees in the stand. However, when the disease is first noticed in a tree, it may have already spread to adjacent trees – those within 50 feet - so the trenching may have to include these trees inside the trench to protect other oaks within the stand. The trenching should never be closer than 10 to 12 feet of a healthy oak to avoid harming the tree and increasing the possibility of wind-throw.

Other useful means of caring for oaks is to avoid pruning all oak in the months of April, May, and June when the trees are most susceptible. Fresh pruning cuts made during this time period are attractive to insects that can carry the spores from infected trees to these new hosts. There are also systemic fungicides that can be injected into the trees to suppress the development of the disease. However, this is a practical means of protecting only high-value trees and should only be performed by certified pesticide applicators that are knowledgeable about the disease and its treatments.

Due to numerous pesticide labels and/or label changes, be sure the product label includes the intended use prior to purchase or use. Please read and follow all pesticide label instructions and wear the protective equipment required. Spraying pesticides overhead increases the risk of exposure to the applicator and increases the likelihood of drift to non-target areas. Consider the use of a commercial applicator when spraying large trees due to the added risk of exposure and equipment needs. The mention of a specific product name does not constitute endorsement of that product by the South Dakota Department of Agriculture and Natural Resources.

For further information contact your nearest South Dakota Division of Resource Conservation and Forestry Office. Hot Springs 605-745-5820; Lead 605-584-2300; Mitchell 605-995-8189; Pierre 605-773-3623; Rapid City 605-394-2395; Sioux Falls 605-362-2830; Watertown 605-882-5367.

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