

A3281

# Honeylocust disorder: Canker diseases in Wisconsin

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The honeylocust has become an increasingly important street and landscape tree in Wisconsin. Finer textured and less formal than most other trees, the honeylocust forms a pleasing silhouette against large buildings or the open sky. Lawns grow better under honeylocust than under most shade trees. Honeylocusts also transplant easily, grow rapidly, and adapt to a wide range of urban environmental conditions. A complex of foliage insects attack honeylocusts; sometimes you must control the insects for healthy trees.

Until the early 1980s, honeylocusts appeared remarkably free of pathogenic diseases. However, an increasing number of honeylocust trees in Wisconsin and adjoining states have developed severe cankers.



**Three distinct cankers appear as sunken, depressed areas on the trunk of this honeylocust.**

## Symptoms and effects

Cankers usually appear as sunken, slightly discolored, brown to reddish-brown “sores” on the bark of the trunk or branches. Initially, distinguishing between diseased and healthy bark is difficult. You may have to remove the surface bark with a knife to detect the inner bark’s (cambium’s) darkened, dead tissue. As cankers age, they become more sunken, discolored, and obvious. Cankers on younger, greenish branches are usually easier to distinguish.

Cankers are usually oval to elongate. Trees frequently have several cankers. The bark sometimes splits between diseased and healthy tissue. Some cankers remain within the resulting crack in the bark, but others continue growing outward beyond the crack.



**On this tree, the crack separates part of the healthy wood from the canker; the diseased bark extends upward on the side, and is only slightly sunken.**



**Canker disease frequently kills tree branches, but the tree may survive for several years.**

Fungi enter through wounds and natural openings. Many cankers are associated with pruning wounds; some develop in crotches of main branches; a few occur around branch stubs where small twigs have died. The bark usually remains attached to the wood for some time after the cambium—the growth layer of the inner bark—has been killed.

Branches above the cankers die when cankers grow over a large enough area to girdle, or effectively cut off, those branches from the root system. The foliage may become sparse and light-colored, or the branch may die suddenly. On some honeylocust trees, diseased branches turn color early in fall. Then the branches die during the winter or next growing season. If too many cankers develop, especially on the trunk, trees are not worth saving.

Cankers also allow wood-decaying fungi to enter trees. Often on old cankers you can see the fruiting structures of decay-causing fungi such as *Schizophyllum commune* or *Polyporus* spp. They weaken the tree and make it more likely to break during wind storms.

Definitive diagnosis of the specific canker requires the presence of fungal fruiting bodies. Fruiting structures occur on the canker's surface, especially during wet weather. Tiny white, cream, pink-to-red, and later, dark brown-to-black conidia about the size of a pinhead may extrude through the bark and lenticels.

Experts in other states have observed tiny red clusters of another fungal fruiting structure, called the perithecium, in small patches on the bark. We have not yet observed the perithecial stage of either fungus on honeylocust in Wisconsin. Saprophytic fungi—different from wood-decaying fungi mentioned earlier—commonly invade the bark surface, covering or masking the canker's fungal fruiting structures. Do not confuse the lenticels or normal bark cushions with fungal bodies.

### Cause

Two canker diseases pose threats to honeylocusts in Wisconsin. The first fungus, *Nectria cinnabarina*, is already damaging trees; the second, *Thyronectria austroamericana*, has the potential to damage trees in the state.

*Nectria cinnabarina* is the name of the perfect stage, when the fungus reproduces sexually; it is not often seen. The imperfect stage occurs commonly in Wisconsin. The fungus can live saprophytically on dead wood of honeylocust, as well as on maple, oak, and several other species.

A second similar canker disease occurs in some southern and west central states. The fungus *Thyronectria austroamericana* causes the canker and it produces an imperfect (pycnidial) stage called *Gyrostroma*. Although this second fungus has not been observed in Wisconsin, additional work may show that both organisms occur here.

Little is currently known about how the fungus is spread. The asexual spores, conidia, are sticky and are spread primarily by direct contact, such as on pruning tools and with rainfall, rather than by wind. Transplanting infected trees and possibly other methods such as insect activity around fresh wounds may spread the fungus to more distant locations.

Scientists have found *Nectria* cankers on many hosts, including birch, elm, linden, maple, *Prunus*, and several shrubs including *Euonymus*. However, the disease hasn't increased significantly on other hosts where locust cankers are becoming epidemic. Fungal strains may differ in the damage they cause various tree species.

## Control

### Prevention

Where the disease is not yet established, try to reduce the possibility of introducing the fungus through infected transplants or on contaminated pruning tools.

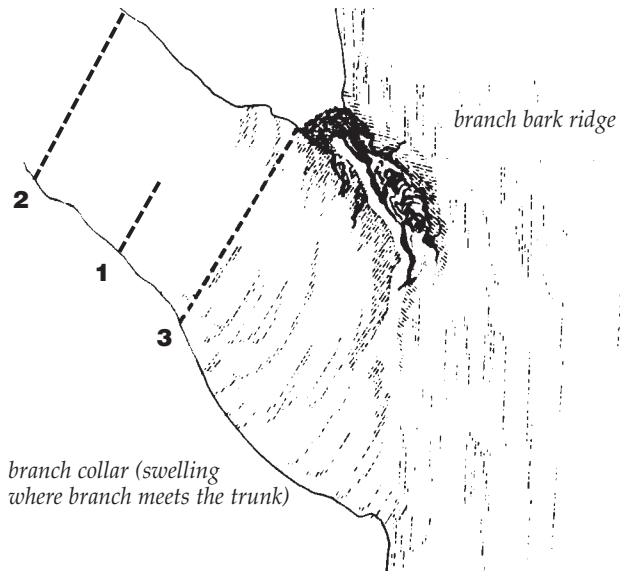
Infections occur almost entirely through wounds and “natural wounds,” such as branch crotches. Infections are most likely to occur when wounds are fresh. Wounds are especially susceptible to *Nectria* for about 1 week and to *Thyronectria* for up to 2 months. Avoid excessive pruning when you transplant honeylocust and when trees are stressed. Don’t remove more than one or two lower branches at a time, prune only when needed, and then only when dry, sunny weather will be around for several days.

Because the fungus is spread by direct contact, such as on pruning tools, covering fresh cuts with tree wound compounds will not prevent infection.

Avoid flush cuts that damage the “branch bark ridge”—that raised furrow of bark between a branch and the trunk. Make the cut at a slight angle outside of the ridge, so as not to damage the swelling of bark surrounding the branch (collar) and immediately adjacent to the trunk. This collar is not always easily observed.

Also avoid lawn mower damage or similar injuries.

Stress, such as root injury, transplanting, and drought, increase susceptibility to *Nectria*. Consequently, do whatever possible to minimize such problems.



**When pruning, make the final cut at a slight angle above the branch collar (the swelling of bark surrounding the branch) and just outside the branch bark ridge.**

### After infection

Once a canker develops, there is nothing you can do to treat it. Conventional tree wound compounds are not effective treatments for cankers, in fact, they may cause more damage by killing tissue.

The tree may begin to heal naturally by forming a callus around the canker. Callusing begins along the side first, and the entire canker is usually walled off within a season. Sometimes callusing is incomplete within a season, especially at the upper or lower margins, resulting in continued fungal activity the next season. Cankers that have effectively been walled off, or callused completely around the margins, should be left alone. Avoid cutting into such cankers as it may renew fungal activity and increase damage.

### Cultivar differences

Experiments in Minnesota indicate that ‘Imperial,’ ‘Skyline,’ and ‘Sunburst’ are equally susceptible to honeylocust canker, while “thornless” honeylocust species were much more resistant. Thus, it appears that the newer, more horticulturally desirable varieties are more prone to these problems. Development of more resistant cultivars is possible.



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