DISEASES

Honeylocust Diseases no. 2.939

by W.R. Jacobi [1]

Quick Facts...

Cankers and root collar rot are the major diseases of honeylocusts.

Canker disease symptoms include sunken, dead areas of bark; dieback; reduced foliage; yellow foliage; premature fall coloration; and early leaf drop.

To control canker diseases, prevent wounds and stress and promote tree vigor.

Root collar rot symptoms include premature fall coloration and discolored bark and wood at the ground line.

Thyronectria canker, a disease that kills the living bark and outer wood of honeylocusts, is caused by the fungus *nectrid (Thyronectrie) austro-americana*. *Tubercularia* canker is caused by the fungus *Tubercularia ulmea*. Root collar rot, a disease of the bark and outer wood on honeylocusts at the ground line, is caused by soil microorganisms. All ages and cultivars of honeylocust, including thornless and podless cultivars, are susceptible to cankers and collar rot.

Symptoms and Signs

Cankers

Disease symptoms include dieback of affected branches, reduced foliage, yellow foliage, premature fall coloration and early leaf drop. Cankers are found at the base of trees, at branch crotches, around wounds or on branch stubs. Cankers can range from slightly flattened surfaces to distinctly sunken areas with large callus ridges at the canker margin. Areas of stems and branches with thin bark may have a red-yellow discoloration. The condition of the bark and cambium (the tree's growth tissue, between bark and wood) can indicate the presence of a canker. Infected bark and cambium will be loose and wood beneath them may have a dark, wine-red to yellow discoloration instead of a normal white or light color. The reddish color associated with the center of honeylocust stems is not related to these diseases.

Diagnosis of the disease is easier if fruiting bodies of the fungi are present. In areas of the bark that have been dead for a year or less, both *Tubercularia* and *Thyronectria* fungi produce small cushions (fruiting bodies) where spores are produced. *Thyronectria* produces bumpy, cushion-like asexual fruiting bodies that are light yellow-brown when fresh but blacken with age. It also produces sexual fruiting bodies (perithecia) that are reddish-brown and also darken. Fruiting bodies usually are found in bark openings, such as lenticels (raised areas of bark that act as breathing pores) and scattered on bark surfaces in thin-barked areas. Large lenticels should not be confused with fruiting bodies.

In contrast to *Thyronectria*, the fruiting bodies of *Tubercularia* are first pink-orange and then blacken with age. These structures usually are about 1/16 inch or smaller, look like small pins with ball-like heads, and are initially found under a paper-thin layer of bark.

Root Collar Rot

Symptoms of root collar rot need to be recognized promptly because the disease can rapidly kill trees. Early fall coloration of a portion of the tree may indicate a large amount of damage. Small drops of gum on the stem near the ground or farther up the stem usually indicate that collar rot girdling occurred below that point. Loose bark and discolored wood (yellow to brown instead of

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Putting Knowledge to Work

Figure 1: *Thyronectria* canker with dark fruiting bodies of the fungus pushing through the bark.

Figure 2: *Tubercularia* canker with small fruiting bodies of the fungus located under a thin layer of bark.

Figure 3: Collar rot symptoms — white, exposed bark and wood are healthy, while yellowish, exposed bark indicates early symptoms of collar rot.

white) just below the bark indicate initial collar rot and are the most indicative symptoms. Extensive death and discoloration of bark and wood can occur over several months. *Tubercularia* or *Thyronectria* cankers at the tree's base usually indicate collar rot is active or was active in the past.

Disease Cycle

Cankers

These fungi overwinter on infected trees as vegetative material (mycelium) and fruiting structures. Since the fungi also can live in dead tissue, they can become established or produce spores on dead wood such as branch stubs, wound edges or firewood. High humidity and wind-driven rain favor spore release and infection. Infections may take place through branch crotches, pruning wounds or other wounds in the bark.

The fungus grows in the bark, cambium, and outer wood, where it eventually kills the cambium and surrounding cells. Death of the tree or affected parts occurs because of cambial death. Fruiting bodies can form within one month after the tree bark is killed and are abundant on dying or dead trees.

Root Collar Rot

Frequent watering in heavy clay soils may induce soil microorganisms to kill the bark and cambium at the tree base just below ground-line. *Thyronectria* or *Tubercularia* may then infect the weakened tree above the area previously killed by collar rot.

Damage and Control

Cankers at the tree base usually are fatal. Main stem or branch crotch cankers may completely girdle the tree, depending on the tree's health. Stressed trees cannot stop the fungus, whereas healthy trees may be able to stop canker expansion and recover.

Root collar rot is common in urban areas in Colorado and nearby states and is responsible for the death of many of the honeylocusts killed by disease.

Cankers

The best way to control cankers is to prevent wounds and promote tree vigor. Any injury to the base of a honeylocust is potentially an entry point for fungi. Lawnmowers, weed trimmers and construction work commonly cause basal injuries. Injuries to the stem and trunk, such as those caused by squirrel gnawing, pruning and sunscald, can be minimized by proper action. Should physical damage occur, remove loose bark and allow the wound to dry.

A variety of stresses predispose honeylocusts to infection by canker fungi. To help prevent infection, avoid stress due to improper planting practices, drought, overwatering and insufficient area and oxygen for root growth. In general, planting small trees (1 to 2 inches) will ensure a better chance of success than planting large trees (4 to 10 inches) that are stressed. Water trees adequately (about 1 inch per week), but do not overwater. To keep trees vigorous, use long, less frequent watering rather than short, more frequent watering. Water once a month during dry winters.

Prune dead or infected branches to reduce the chance of other infections. Prune cankers on limbs by cutting at a branch junction and at least 1 foot below the visible margin of the canker. Prune in cool, dry weather to minimize reinfection. Cut out small cankers on main stems. Remove dead or dying bark and discolored wood. The area of bark removed should extend 1 inch into healthy tissue. If the tree appears to be recovering, however, do not cut into healthy tissue. Wound dressings are not recommended. Disinfect all tools used to prune and cut. Spray with Lysol or dip in 70 percent rubbing alcohol or a 10 percent

bleach solution (one part bleach to nine parts water) and dry after each cut.

Prompt removal of all infected trees reduces the chance of spreading the infection. Because canker fungi can grow on dead wood and produce spores that can infect nearby trees, keep the wood dry, bury it in a landfill or burn it within three weeks of cutting.

Research shows Sunburst honeylocust is the most susceptible to cankers, while Imperial, Skyline and Thornless are most resistant.

Root Collar Rot

Allow the soil at the tree base to dry out between waterings to prevent bark death at the soil line. Frequent irrigation of turf is the primary factor related to this disease. Place sprinklers and sprinkler heads far away from trees to keep the least amount of water from falling on the tree stem and at the tree base. Remove flowers, turf or other vegetation from around the tree's base to help keep the soil dry. Replace soil with small gravel or mulch at the tree base to help prevent overwetting. Plastic on the soil around the tree base may or may not promote the disease, depending on the amount of moisture retained in the soil.

[1]Colorado State University professor, bioagricultural sciences and pest management.