DISEASES

Honeylocust diseases no. 2.939

By William 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, premature fall coloration and early leaf drop.

The best control of canker diseases is the prevention of wounds and stress and the promotion of 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 bark and outerwood of honeylocusts, is caused by the fungus *Thyronectria austro-americana*. *Tubercularia* canker is caused by the fungus *Tubercularia ulmea*. Root collar rot, a disease of the bark and outerwood 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 discoloration (wine-red to yellow) 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. Do not confuse large lenticels 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 in size or smaller, look like small pins with ball-like heads and 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 kill trees rapidly. 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 girdling by collar rot occurred below that point. Loose bark and discolored (yellow to brown instead of white) wood just below the bark indicate initial collar rot and are the most indicative symptoms. Extensive death and discoloration of bark and wood

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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 is healthy while yellowish exposed bark indicates early symptoms of collar rot.

can occur over several months. *Thyronectria* or *Tubercularia* cankers at the tree's base usually indicate collar rot is active or was active in the past.

Disease Cycle

Cankers: These fungi overwinter as vegetative material (mycelium) and fruiting structures on infected trees. 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 probably favor spore release and spread infection. Infections may take place through branch crotches, pruning wounds, or other physical wounds in the bark.

The fungus grows in the bark, cambium (the tree's growing tissue), 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* then may 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, 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 Colorado urban areas and is responsible for the death of many of the honeylocusts killed by disease.

Cankers: The best control of cankers is the prevention of wounds and promotion of high 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 of branches 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 the 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 assure 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. Long less frequent watering rather than short more frequent watering, and watering once a month during dry winters, will keep trees vigorous.

Prune out dead or infected branches to reduce the chances of other infections. Prune out cankers on limbs by cutting at a branch junction and at least 1 foot below the visible margin of the canker. Prune in cool and dry weather so reinfection of the pruning wound is minimized. Cut out small cankers on main stems. Remove dead and 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 bleach (1 part bleach to 9 parts water) and dry after each cut.

Prompt removal of all infected trees reduces the chances for infecting nearby trees. Since both fungi can grow on dead wood and produce spores that

can infect nearby trees, keep the wood dry, bury in a land fill or burn within three weeks of cutting.

Research shows Sunburst honeylocust is the most susceptible to cankers while Imperial, Skyline and Thornless selections 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 base. Remove flowers, turf or other vegetation that require water from the tree's base to help keep the soil dry. Replace soil with small gravel or mulch at the tree base to prevent overwetting. Plastic on the soil around the tree may or may not promote the disease depending on the amount of moisture retained in the soil.

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