

annosus root rot

- Disease of pine trees
- Infected pines can fall over in heavy winds due to rotten ripped roots
- Infected roots look resin-soaked or may have white stringy decay
- Rubbery tough conks may be present at the base of trees
- Infected trees are a paler green than healthy trees

annosus root rot



black knot

- Irregular, rough, black swelling on cherry branches, charcoal like in appearance

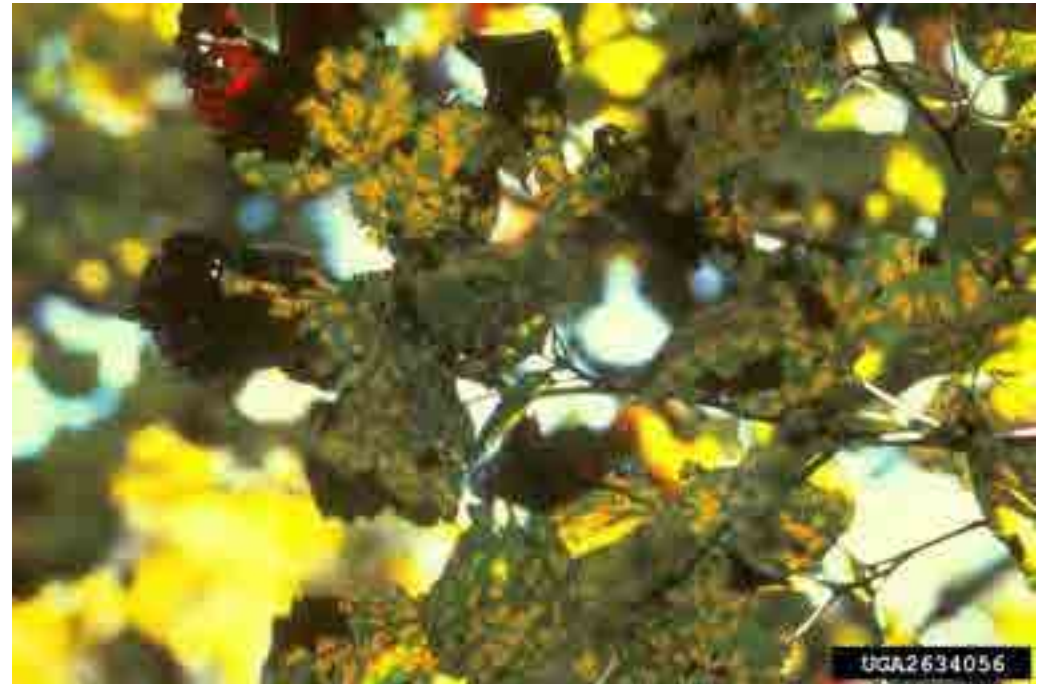
black knot



cedar-apple rust

- Two host plants, eastern red cedar and apple trees. Apples are damaged more severely, possibly resulting in death of the tree
- Fungus forms bright orange horns on the branches of cedar. Yellow leaf spots approximately 3/8" which are sometimes banded in red are formed on apple leaves

cedar-apple rust



fusiform rust

- Two hosts, pine and oak
- Fusiform rust rarely infects shortleaf pine; loblolly and slash pines are the only ones considered to be hosts.
- On pine trees there are orange spores on the surface of large swollen galls. Oaks will have black spores or hairlike structures on the lower surface of the leaf.

fusiform rust



Hypoxylon canker

- Hypoxylon canker occurs on many oak species
- Leaves of trees infected with *Hypoxylon* turn yellow and wilt, and entire branches die. The bark sloughs off, exposing the stroma. The stroma may appear dusty brown, black, silver, or white depending on it's age as it progresses from it's asexual to sexual stage.

Hypoxylon canker



lichens



- Symbiotic relationship between algae and fungi. Do not actually cause disease.

mistletoe



- smooth-edged oval evergreen leaves borne in pairs along the woody stem, and waxy white berries in dense clusters

Neonectria canker

- Creamy white fruiting structures, pinhead sized, red, lemon shaped fruit near canker margin.
- Well-defined areas of bark, cambium and underlying wood are killed by the fungus.
- Well-defined localized areas of bark, cambium, and underlying wood are killed by the fungus. Concentric, annual callus ridges develop around the expanding canker, and bark sloughs off the older parts of the canker. After several years, the canker resembles a target.

Neonectria canker



oak leaf blister

Occurs in summer as blister like circular raised areas.

Does not pose a real threat to the health of tree, but affects appearance of tree. Red oak are especially susceptible.



pine needle rust

- Infected pines have white-orange blisters on the needles. May have orange powdery spores on leaves

pine needle rust



powdery mildew

- A white, powdery mold occurs on leaves and buds. Leaves may be distorted, stunted and fall prematurely.

powdery mildew



sooty mold

- Black mold on leaves of affected plants, can be rubbed off (looks like soot)

sooty mold



tar spot

Caused by several species of fungus in the genus *Rhytisma*.

Spots occur in summer. The spores are not produced until spring and are carried by wind.



witches broom

- Infection causes masses of clustered new growth of the host tree, not a parasite
- It resembles a broom in many cases
- Many pathogens can cause this symptom

witches broom



artist conk

- A very distinctive shelf-like fruiting structure forms singly on the wood at or near the soil line. It is brown to reddish brown on top with a cream to white-colored margin. The brown portion appears to have been varnished.
- The shelf grows perennially for 5 to 10 years and may reach 8 to 12 inches across. The underside of the shelf is light colored with millions of tiny pores in which the spores are formed.
- The underside burns brown where scratched and forms an interesting drawing surface, thus the common name "Artist's Conk."
- Infected trees slow their growth rate, have dying branches, and have leaves that are small and yellowed.

artist conk



brown spot needle blight

- Problem on Longleaf Pine only
- Infected needles develop grey-green spots, which later turn brown. Eventually, a yellow band develops on the needle. The affected area then increases in size, resulting in death of the needle.
- Seedlings are often heavily infected while in the grass stage and often die after repeated defoliations.

brown spot needle blight



chestnut blight

- Affects American Chestnut trees
- Stem cankers are either swollen or sunken, and the sunken type may be grown over with bark. The bark covering the swollen cankers is usually loose at the ends of the canker.
- Trees die back above the canker and may sprout below it.
- Frass and webs from secondary insects are common under loose bark.
- The fungus forms yellowish or orange fruiting bodies (pycnidia) about the size of a pin head on the older portion of cankers. Spores may exude from the pycnidia as orange, curled horns during moist weather.

chestnut blight



dogwood anthracnose



Dutch elm disease

- Primarily affects American and European elms
- Symptoms of the disease include wilting, yellowing, and browning of the leaves, brown or purplish brown streaking of the wood under the bark, and crown dieback. Symptoms normally progress rapidly through the crown. Complete wilting often occurs within six weeks of infection.

Dutch elm disease



Photo credit: City of Winnipeg

needle cast

- Depending on the identity of the infecting fungus, needles begin to turn yellow-brown by winter or early spring. Later, the browning progresses, and fungal fruiting bodies are produced. These small, black, fruiting bodies may be bordered by brown or yellow margins, or both. In the more advanced stages, the tree has a scorched appearance.

needle cast



oak wilt

- The leaves turn dull green or bronze, appear water-soaked, wilt, and then turn yellow or brown. Damage occurs from the tip and outer edges toward the midrib and base. Wilting leaves typically curl around the midrib and the line between the bronze and green tissues in individual leaves is very distinct.
- These symptoms quickly appear throughout the crown, often within a few weeks, and leaves at the ends of branches are shed.

oak wilt



red heart of pine

- The fungus produces perennial conks, which are frequently hoof-shaped. Those that are not, lie flat against the stem, projecting a light brown surface outward.
- Hoof-shaped conks have a dull gray to dark brown upper surface, with concentric furrows parallel to the margin. The underside is light brown to brownish-gold, and velvety in texture.
- Infected heartwood is often light red to reddish-brown. The advanced stages of heart rot appear as elongated white pockets or flecks parallel to the grain and separated by apparently firm wood. Affected trees exhibit swollen knots.

red heart of pine



white pine blister rust

- On pines, the first symptom may be a small, yellow or red spot on a needle, but this is difficult to find. Within a year or two, perennial cankers can be found on branches. These may become somewhat swollen and may have a yellowish margin. Cankers close to the stem may invade the stem. When a stem or branch is girdled (killed around the entire circumference) by the canker, it is killed beyond that point.
- From a distance, symptoms seen are chlorotic, stunted, or dead branches (flagging) and dead tops.

white pine blister rust

