Gypsy Moth Disease

The gypsy moth was brought to the United Sates in 1869 in a failed attempt to start a silkworm industry. Over the past century, the gypsy moth has become a major pest in the northeastern United States and southeastern Canada.

Damage

Tree damage is caused by the insect larvae, or caterpillars, which emerge from their eggs beginning in early spring and continuing through mid-May. The larvae move to the leaves of trees and begin to eat, mostly at night.

Trees Susceptible

The gypsy moth has a preference for the leaves of deciduous hardwood trees such as maple, elm, and particularly oak. They also can feed on apple, alder, birch, poplar, and willow trees. As it grows it will also attack evergreens like pines and spruces. Gypsy moths appear to dislike ashes, sycamores, butternuts, black walnuts, dogwoods and balsams. However, during heavy infestations, competition for food will drive the caterpillar to attack almost any tree or shrub.

Control

The gypsy moth can be combated at the egg, caterpillar, and adult moth stages. Egg masses, when discovered, should be burned or soaked in water or kerosene. It is also a good idea to wrap your trees with Tree Help Bug Bands, which prevents the caterpillars from reaching the foliage from the ground. Infested trees should also be wrapped to prevent any spreading. If the moths have emerged, use a Gypsy Moth Trap, which will attract and kill the moths.

Dutch Elm Disease

Dutch elm disease is a wilt disease first found in the United States in Ohio in 1930. It has now spread throughout North America and has destroyed over half the elm trees in the northern United States.

Damage

Dutch elm disease is caused by the fungus *Ophiostoma ulmi*, which is transmitted by two species of bark beetles or by root grafting. After the disease is contracted, spores rapidly reproduce and spread toxins throughout the tree. It can kill a tree within a few weeks or it can kill it gradually over a period of years. The fungus blocks the water-conducting or vascular system of the tree preventing water and minerals from reaching the branches and leaves. The leaves wilt and eventually the tree dies.

Trees Susceptible
The fungus *Ophiostoma (Ceratosystis) ulmi* attacks various species of elm.

Control
There is no way to eliminate Dutch elm disease once it begins. Control efforts focus on two areas – prevention and treatment. The spread of Dutch elm disease can be effectively checked with a stringent sanitation program involving surveillance, timely pruning and proper disposal of infected wood. Directly attacking the elm bark beetle population can be done but is less effective because only a small percentage of the beetle are carriers of the disease. Also, you can improve the soil with mycorrhizal fungi and fertilizer, which boosts a tree's strength.

Verticillium Wilt Disease

Verticillium Wilt is common in many soils and affects several hundred herbaceous and woody plant species.

Damage
Verticillium wilt is caused by the soil-borne fungi, *Verticillium albo-atrum* and *Verticillium dahliae.* The fungus first enters the roots through wounds, but if the tree is weak, it can actually penetrate the root. When a plant dies, the fungus enters a resting state, producing structures called "microsclerotia". These structures can be easily transported from place to place when trees are transplanted. In dry conditions, these microsclerotia can by carried by the wind to infect new areas. Once inside the root, the fungus reproduces and spreads through the tree's water-conducting tissue. As it spreads, it causes tissue damage and clogs this tissue, preventing water from reaching the outer branches. Without moisture and necessary nutrients, these outer limbs wilt and die.

Trees Susceptible
The fungus affects more than 300 types of plants throughout the world. It affects anything from raspberries and tomatoes, to maples and elms. Although the disease occurs in naturally forested areas, it is found mostly in landscape plantings. These trees are most susceptible to Verticillium: Ash, Azalea, Japanese Barberry, Korean Boxwood, Ohio Buckeye, Catalpa, Kentucky Coffee tree, Cork tree, Dogwood, Elder, Elm, Honeysuckle, Lilac, Linden, Black Locust, Magnolia, Maple, Oak, Plum, Redbud, Rose, Russian Olive, Serviceberry, Smoke tree, Spirea, Sumac, Viburnum, and Wigela.

Control
If Verticillium wilt is diagnosed at a particular site, a tree resistant to the disease should be replanted in the site. A few common examples of plants typically free of this disease include: crabapple, mountain ash, beech, birch, boxwood, dogwood, sweet gum, hawthorn, holly, katsuratree, honeylocust, oak, pear, London planetree and sycamore, rhododendron, willow, and zelkova. Also, just keep your plants as healthy as possible by using proper transplanting practices, proper water management to avoid droughts, a

good fertility program, and pruning out dead branches are all good plant health care management practices.

Oak Wilt Disease

Oak wilt has been found in 21 states, with considerable damage occurring in the Midwest states. It was first recognized as an important disease in 1944 in Wisconsin where, over half the oaks have been killed.

Damage

Oak wilt is caused by a fungus, *Ceratocystis fagacearum.* The fungus invades water-conducting vessels and induces the formation of balloon-like projections called tyloses, which also plug the vessels. As water movement within the tree is slowed, the leaves wilt and drop off the tree.

Trees Susceptible

Oaks in the red oak group are susceptible to Oak wilt disease including black oak, northern red, northern pin and others with pointed leaf edges. Oaks in the white oak group including white oak, swamp white, burr, and others with rounded leaf edges are less susceptible.

Control

There is no known way to save an oak tree infected by the oak wilt fungus. The only way to maintain healthy trees is through prevention. Early detection and prompt removal of dead or dying trees and breaking root grafts between diseased and healthy trees are essential. It is also important to destroy the infected trees by being cut down and burned. To slow down or prevent root transmission of the fungus, root connections between diseased and healthy trees should be severed.

Sudden Oak Death

Sudden Oak death was first noticed in 1995. This disease has been confirmed in the coastal areas north and south of San Francisco, and in a relatively remote location in southwestern Oregon.

Damage

Sudden oak death is caused by a pathogen called *Phytophthora ramorum*. The pathogen is not a fungus or a bacterium, but a member of a unique group of organisms called Oomycetes. Oomycetes share some characteristics of fungi but are biologically different.

Trees Susceptible

Sudden oak death is a serious plant disease that attacks many types of plants and trees common to the Pacific Northwest, including azaleas, big leaf maples, huckleberry, California bay laurel, camellia, myrtles, honeysuckle, Pacific madrone, Douglas fir, rhododendrons, and vibernum.

Control

There currently are no known cures or preventatives for Sudden Oak Death. The use of any pesticide to control Sudden Oak Death is experimental at this time. Keep your trees healthy and avoid spreading the disease to uninfested areas.

Emerald Ash Borer (EAB)

In the summer of 2002, scientists detected a new exotic insect in six southeast Michigan counties - Livingston, Macomb, Monroe, Oakland, Washtenaw and Wayne. This pest, known as the Emerald Ash Borer, is an invasive species originally from Asia and previously unknown in North America that attacks ash trees. To date, it has killed or damaged millions of ash trees in Michigan. It has been detected in Ohio, Indiana, and Windsor, Ontario, Canada.

Damage

The Emerald ash borer feed in the cambium between the bark and wood, producing galleries that eventually girdle and kill branches and entire trees. In its native Asia, EAB attacks and kills ash trees that are already weakened by disease, environmental stress, or mechanical damage. However, in North America, EAB attacks and kills healthy trees as well. This devastation is possible because, unlike Asian ash trees, our native trees have no built-in resistance to EAB. To make matters even worse, many of the predators, parasites, and diseases that keep EAB populations low in Asia are not present in North America.

Trees Susceptible

Emerald ash borers attack all species of North American ash trees. There are an estimated 7.5 billion ash trees in the United States with about 150 million ash trees in Indiana forests. Many more ash trees can be found in Indiana's urban area where ash trees make up to 40% of the urban forest composition. All North American ash trees, from the smallest saplings to giant trees are vulnerable to attack by EAB. Mountain ash is not a true ash tree and is not attacked by EAB.

Control

There are many things you can do now to lessen the likelihood of EAB's becoming established in the United States. Don't move firewood. EAB larvae can survive hidden under the bark of firewood. Also, visually inspect your trees. Early detection is a key factor. If trees display any sign or symptom of EAB infestation, contact your State agriculture agency. Another thing you can do is spread the word about EAB. Talk to your neighbors, friends, and coworkers and get them onboard. Public awareness and

education is an ongoing process; support the effort. Make sure you understand the regulations that govern your own State and those States and Provinces you may visit.

There is excellent information about these diseases and pests available.
Some of these include:

1. **World Wide Web** - go to your search engine and type in the pest or disease you are interested in.
2. **Wisconsin DNR website – www.dnr.state.wi.us**
3. **City Forestry Department – 646-4612**
4. **Other sources**
    a. **USDA**
    b. **Richland County Extension Office**