

# Down the Garden Path



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Plant & Pest Diagnostic Laboratory

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## YARD

### Squirrels! Squirrels! Squirrels!

*Judy Loven, Animal Damage Control Specialist*

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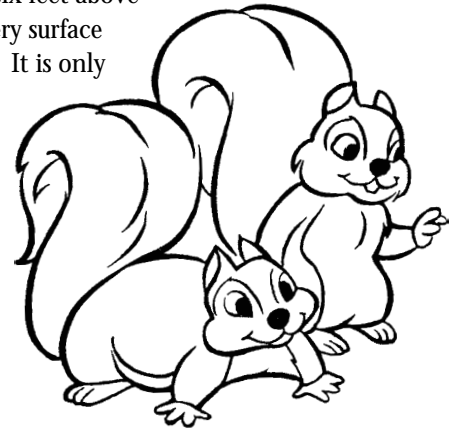
Two species of tree squirrel are commonly found in Indiana. The fox squirrel measures 18 to 27 inches in length, weighs between 1.5 and 2.25 pounds, and usually appears gray-brown on the back with an orange belly. The Eastern gray squirrel is slightly smaller and also shows variability in coat color. Some gray squirrels are indeed gray, but others may have a distinct reddish cast to their gray coat or may even be black.

Fox and gray squirrels have similar food habits. They will eat a great variety of native foods and adapt quickly to unusual food sources. Squirrels may feed on wild tree fruits and nuts in fall and early winter. They seem to prefer tree buds in early spring, and will eat corn and other cultivated crops, fruits, nuts, berries, and flower bulbs whenever available. Pet food and bird feeders are squirrel magnets in residential areas. Squirrels may damage trees by chewing bark from branches and trunks.

To prevent squirrels from climbing isolated trees, attach a two foot wide band of sheet tin around the trunk six feet above ground level. This provides a slippery surface that squirrels find difficult to climb. It is only effective on individual trees where the canopy does not come close to another tree. If several trees are in close proximity, each tree would need to have a metal band. Custom designed wire mesh fences topped with electrified wires may effectively keep squirrels out of gardens or small orchards.

Chemical repellents have shown variable effectiveness in preventing squirrel damage. Several taste repellents are available in yard and garden centers. Repellents often have restricted use on food crops, so read the label carefully before applying to fruits or vegetables. Home remedies such as blood, predator urine, human hair, and bars of soap strung along a fence have not proven effective in stopping squirrel damage.

A variety of traps are available for catching squirrels. Most commonly recommended in yard and garden applications is the cage trap. Good baits for squirrel traps include apples, shelled nuts, raisins, peanut butter, or sunflower seeds. Shooting may also be an alternative in rural areas. Squirrels are classified as game animals in Indiana. Contact your local Indiana Department of Natural Resources (IDNR) Conservation Officer for a permit or permission to trap or shoot squirrels. ☺



## Plant Problems--Part Two: Oak Troubles

Gail Ruhl, Plant Disease Diagnostician

**Oak leaf blister** is one of the diseases caused by fungi in the genus *Taphrina*. Spores of this pathogen overwinter in bud scales. Infection takes place in early spring, when leaves are expanding, and when environmental conditions are optimal (wet). Small "bulges" about 1/8 to 1/2 inch in diameter develop on the upper leaf surface. These "bulges" appear as depressions when the lower leaf surface is observed. The affected areas are initially pale green or yellow. As the season progresses, the affected areas turn brown in color.

There is no secondary disease cycle for this fungal pathogen, so the disease will not spread to healthy leaves during the growing season. Although heavy infection can result in defoliation, significant leaf drop on oaks in the Midwest is usually not observed.

**Tubakia leaf spot**, formerly called *Actinopelte* leaf spot, is a common late-season foliar pathogen. This year, the disease is occurring earlier than usual. Symptoms include small to large dark brown or reddish-brown spots or blotches on leaves of trees in the red oak group (such as pin oaks and red oaks). The symptoms can mimic those from severe iron chlorosis. Both problems are often present on the same tree. *Tubakia* leaf spot can cause early defoliation of heavily infected oaks. Usually the disease develops late enough in the growing season that permanent damage to trees does not occur. Proper cultural care of affected trees will help reduce the effects of this disease.

**Powdery mildew** becomes a highly visible fungal disease on oaks in late summer and early fall. This disease is aptly named due to the powdery white fungal threads (*mycelium*) and spores which cover the leaves. This disease does not usually cause any significant health threat to the trees due to its late occurrence in the growing season.

**Leaf curling, shriveling, and scorch** are often a response to adverse environmental and/or site conditions. Noninfectious factors such as drought stress, root injury from construction activities, soil compaction, overfertilization, or nutrient deficiencies can trigger foliar responses in trees. Affected trees will normally survive, but may develop branch dieback and crown thinning in subsequent years. To reduce the adverse effects of these stress factors, maintain the health and vigor of symptomatic trees by proper watering and fertilizing, and by avoiding site disturbances that may injure roots.

Some leaf curling observed on oak can be attributed to feeding by leafhoppers. These insects have piercing-sucking mouthparts, and their feeding activity can cause leaves to become curled and distorted. Adult leafhoppers move very quickly and are often difficult to see. Therefore, as an indication of the presence of leafhoppers, it is often easier to look for the old insect skins (whitish debris about 1/8 inch long) on the undersides of symptomatic leaves.

**Oak wilt** is a serious and widespread disease on oak trees in Indiana, especially red and black oaks. This vascular disease is caused by the fungus *Ceratocystis fagacearum*. The fungus enters the tree through fresh wounds via sap-feeding beetles, or by root grafts connecting healthy and diseased trees. Once inside the tree, the fungus multiplies within the water-conducting vessels (xylem) of the sapwood, causing the vessels to become plugged. Water and nutrient flow are disrupted, causing the oak to wilt.



Symptoms vary, depending on the species of oak affected. Generally, oaks in the red-black group are much more susceptible to oak wilt than white or bur oaks. Infection of red or black oaks in early summer will generally result in tree death by late summer. Infected trees develop discolored and wilted leaves at the top of the tree or at the tips of the lateral branches in late spring and early summer. The leaves curl slightly and turn a dull pale green, bronze, or tan color, starting at the margins. Usually by late summer, an infected tree has dropped all its leaves. Streaking of sapwood, typical of most tree wilt diseases, is visible in larger twigs and branches on actively wilting and defoliating trees.

Oaks in the white-bur group are much more resistant to oak wilt, and thus disease progression and symptom appearance is more gradual. Often only single, scattered limbs throughout the crown will show symptoms. Leaf drop is generally not pronounced, and an infected tree may survive several seasons before its eventual death.

Oak wilt is particularly threatening because there is no complete control or cure once the tree becomes infected with the fungus. However, you may be able to save nearby trees by preventing the spread of the fungus from diseased to healthy oaks. Since fresh wounds represent one way the fungus can enter a healthy tree, caution should be used when working in the vicinity of oaks. Pruning of oaks should be done in the winter, if feasible and *only* after mid-summer. *Do not* prune in spring and early summer when insect activity is high. The only way to prevent root grafts is to plant trees more than 50 feet apart. Established root grafts can be disrupted mechanically. For additional information on disruption of root grafts, tree removal, and sanitary pruning, refer to BP-28, *Oak Wilt*, available through your local county extension office or the Purdue Media Distribution Center (317-494-6794).

Oak wilt may be confused with other disorders that cause dieback and decline of oaks. Root injury resulting from soil compaction, grade changes, root restriction, construction, and other site related stress factors may cause symptoms that could be mistaken for oak wilt. Often, many older oaks are killed by an apparent complex of factors involving drought, insect borers, and root decay. Thus, positive identification of oak wilt requires laboratory confirmation.

If you think a tree is infected with oak wilt, you may send several *actively wilting* branches to the Plant and Pest Diagnostic Lab for confirmation. Select several six to eight inch sections, about the thickness of a thumb, from freshly wilting branches (not dead ones) that show the symptoms described above, including vascular discoloration. To detect the discoloration, peel some of the bark back with a knife. The sapwood of a healthy tree is white or tan. A tree suspected of oak wilt shows brown and white streaking of the wood. Do not peel all of the bark back on the branch sample since we will need an undisturbed area on the branch for isolation. Samples without streaking have never yielded the oak wilt fungus in our lab. Wrap the branches in dry paper, place in a plastic bag, and keep cool and dry. Mail early in the week so there is little time for deterioration. Culturing a sample for a vascular disease such as oak wilt requires about 7 days of incubation before the fungus develops to the point that it can be identified.

When sending a sample for testing, be sure to include as much additional information as possible. A complete history of the tree and planting site is helpful in making an accurate diagnosis. The addition of two or more inches of topsoil over an established root system or the building of a home amidst a grove of oaks can kill a mature oak tree in one to seven years. These factors may also weaken the tree so that it becomes more susceptible to oak wilt. ☺

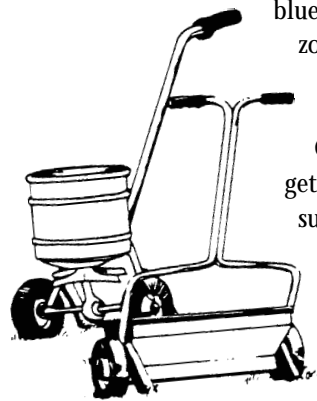
## THE GRAPE VINE

### CANADAGREEN

Zac Reicher, Turfgrass Management Specialist

“CanadaGreen... The amazing new hybrid grass seed gaurentees you a lush green lawn in all four seasons, in every climate.”

Does this advertisement look familiar? If it sounds too good to be true, it most likely is. There are no turfgrass species that we know of that will provide results like this ad promises. Since no species and/or cultivar name nor a company name or phone number are listed in this ad, it makes one question the integrity of this advertisement.. Plus it is selling for over \$9.00 per pound of seed! It appears that this ad is for some “get rich quick and disappear” company. In Indiana, there are few worthwhile substitutes for Kentucky



bluegrass, perennial ryegrass, tall fescue, or maybe zoysia or fine fescue for lawns. If a turf species that is honestly new and improved is found, we will certainly pass it on to you.

One good thing about this ad is that it might get homeowners thinking about reseeding their summer-damaged lawns. Remember that every week you wait to seed this fall costs you two to four weeks for establishment. So seeding on September 1 could produce a fairly good stand of turf by October 14, but waiting until September 7 may prevent a fairly decent stand until October 28 or even later. SEED NOW!

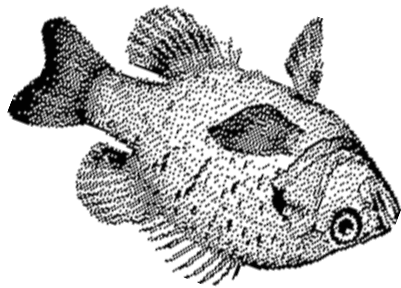
Perennial ryegrass is becoming very common in most lawn mixes because it is quick to germinate and establish especially compared to Kentucky bluegrass. But perennial ryegrass is very susceptible to a number of diseases that could wipe out the lawn in summer and Kentucky bluegrass is still the species of choice for the northern two-thirds of Indiana.

As a general rule for lawns, avoid seed mixes containing more than 10 to 15 percent perennial ryegrass. If you are seeding by the first week of September in the northern two-thirds of the state, consider using a 100 percent Kentucky bluegrass blend without any perennial ryegrass in the seed lot. To help insure adequate establishment by winter, include perennial ryegrass in the seed mix if you are seeding later than the first or second week of September. If seeding as late as October 1 (which is about the last date to seed in the northern two-thirds of Indiana) you may need up to 20 percent perennial ryegrass in the seed.

Tall fescue is the species of choice in southern Indiana because it is more drought and heat tolerant than Kentucky bluegrass or perennial ryegrass. A drawback of tall fescue is that it is susceptible to brown patch, but it is still a better choice than Kentucky bluegrass for most lawns in southern Indiana. Avoid perennial ryegrass for lawns in southern Indiana. Tall fescue should generally not be mixed with any other species in a seed mix because it will cause a clumpy and uneven lawn, though mixing a maximum of 10 percent Kentucky bluegrass with 90 percent tall fescue may improve density and the lawn's ability to repair from damage. Optimum seeding date in southern Indiana is September 1 and avoid seeding after the third week of October. ☺

## OVER THE BACK FENCE

**Q:** I have noticed dead fish recently in my pond. What is the most likely cause?



**A:** Homeowners with small farm ponds may occasionally experience a summer fish kill. Generally, the first thought is that a pesticide somehow washed into the pond. Although certain pesticides, particularly insecticides, can cause fish kills, the most likely explanation (if no pesticides were used in the area) is excessive aquatic plant growth.

Aquatic weeds can play a role in causing fish kills. This usually occurs because oxygen is taken out of the water. During the day, plants produce oxygen through photosynthesis; at night (as well as day), they consume oxygen through respiration. If plant growth is excessive, plants at night can use up most of the oxygen in the water. In fact, fish that are stressed for oxygen often die just before dawn when the oxygen content is lowest.

Oxygen depletion also occurs when plants die and decompose. When plants die, photosynthetic production of oxygen ceases, and the bacteria, which break down the decaying plant material, use oxygen in their own respiration.

Fish kills in summer are sometimes caused by die-offs of algal blooms. Stress due to prolonged periods of low oxygen content (e.g. after a period of cloudy, warm days) may lead to greater fish susceptibility to disease and toxicants.

Treat ponds for algae early in the summer with copper sulfate before excessive growth may lead to a fish kill.

For more information on managing aquatic weeds obtain a copy of *Aquatic Plant Management WS-21* from your local county Extension office. --Carole Lembi and Dan Childs ☺

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