

## Chlorosis

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**What is chlorosis?** Chlorosis is a common nutritional disorder of many woody ornamentals in Wisconsin, particularly in the southern and eastern parts of the state. Pin oaks are most commonly affected by chlorosis, although many other trees and shrubs (e.g., white oak, red maple, white pine and *Rhododendron* spp.) are also very susceptible.



**Yellowing of foliage characteristic of chlorosis.**

**What does chlorosis look like?** Symptoms of chlorosis are easy to distinguish from those of other diseases. Affected leaves turn yellow, except for the veins, which remain green. In severe cases, foliage may turn brown and die. Symptoms can occur on isolated branches, or over an entire tree.

**What causes chlorosis?** Chlorosis occurs when a tree or shrub is lacking certain micronutrients, in many cases iron or manganese. Lack of micronutrients in a tree may reflect a lack of these nutrients in the soil due to poor fertility. Often, however, there are sufficient micronutrients in the soil, but they cannot be absorbed by a plant's roots. Poor absorption of micronutrients is common in Wisconsin because of the high pH (alkalinity) of many soils.

**How do I save a tree or shrub with chlorosis?** Chlorosis is rarely fatal and can be treated. For treatments to be effective, you must determine the exact cause of the chlorosis. Have the soil around an affected plant tested for micronutrients and for pH prior to applying any treatment. If the soil test indicates a lack of specific micronutrients, fertilize with these micronutrients. For example, chelated iron compounds can be used to increase the amount of iron in soil. If the soil test indicates a high soil pH, lower the pH by applying sulfur or ammonium sulfate (see

University of Wisconsin Garden Facts XHT1151). Contact your county Extension agent for information on soil testing, and for details on a treatment once you have determined the specific cause of your chlorosis problem.

**How do I avoid problems with chlorosis in the future?** Plant trees and shrubs that are less susceptible to chlorosis, and make sure your trees and shrubs receive sufficient water (approximately one inch per week). This will help plants with micronutrient uptake. If rainfall is insufficient, use a drip hose or soaker hose to apply supplemental water. Remove turf from around the base of a tree and shrub out to at least the drip line, and apply shredded hardwood, pine or cedar mulch in this area to help keep the plant's root system moist. On heavy clay soils, use three inches of mulch. On other soils, use three to four inches of mulch. Be sure to keep mulch two inches from the main trunk of a tree. If you decide to plant susceptible trees or shrubs, watch them closely for yellowing characteristic of chlorosis and apply corrective treatments as soon as symptoms appear. Treatments should always be based on the results of soil micronutrient and pH tests.

**For more information on chlorosis:** See UW-Extension Bulletin A2638 (available at <http://learningstore.uwex.edu>) or contact your county Extension agent.

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