

What is Chlorosis?

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Perhaps you've heard of the term chlorosis, but more likely you've seen trees and shrubs in our area with really yellow leaves when they should be green. Typical is veins of the leaves are green but the between vein areas are yellow. This unnatural yellowing is chlorosis, a chemical deficiency in the plant that can be caused by several things.



There can be several causes of chlorosis but for our area the main culprit is our high soil pH. When the soil pH is too high, many plants cannot absorb nutrients the way they need. Most plants prefer soil pH of 5.0 to 6.5; 7.0 is neutral, below is acidic, above is alkaline. Our soils and municipal water often measure at 7.6 or above and the river's water is even higher making a very alkaline environment. The high alkalinity prevents plants from taking in iron, a necessary nutrient, even if the iron is present in adequate amounts in the surrounding soils.

Susceptibility to chlorosis changes between plant varieties, some are fine in a high pH environment, some definitely are not. For instance, just within maples both Silver and Sugar maples easily become chlorotic while other varieties like Sienna Glen, Amur, and Hot Wings do not. Magnolia, river birch, some oaks, grapes, cucumbers, and even some squash and watermelon are more susceptible to chlorosis than others.

The best long-term solution is to avoid planting varieties that are susceptible to chlorosis. Digging a huge hole and replacing with pH neutral soil or adding substances like ammonium sulfate which lowers soil pH will last a few years but the native soil type will eventually take over.

There are several short term solutions to consider: soil treatments, foliar spraying, and trunk injections. However it should be noted that these simply treat the symptoms and do nothing to solve the problem. Foliar sprays of chelated iron or iron sulphate turn yellow leaves to green the quickest, often within 48 hours, but only last 2 to 3 months and only affect the existing leaves so new leaves will turn yellow as they did not get sprayed. Also the bigger the tree the harder it is to spray.

Soil treatments also consist of chelated iron or iron sulfate mixed into the top couple of inches of soil. Ammonium sulfate can also be tried but unless it can be put more than a couple of inches deep will take quite awhile to get to the roots. Soil treatments will take longest to manifest their effect on yellowing leaves. Trunk injections last the longest, up to 2 to 3 years. Green-up of leaves is fairly quick but this treatment requires an arborist or professional tree service to assure safe and effective results.

Chlorosis is important to address as this is a stress to the plant. Additional stresses such as a hard winter, a hot, dry spell without adequate water, and insect or other disease pressures all become additive and can cause increasingly worse plant health and even death.

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