

IRON CHLOROSIS IN TREES

In traveling around southeast Nebraska I am seeing a number of trees in the area showing signs of iron chlorosis. This is the condition when the leaves of trees are more yellow than normal. In the environmental conditions southeast Nebraska has experienced in recent years, trees have been under a great deal of stress. Anything that can be done to reduce stress on trees will be beneficial to the tree, especially in the long-term, and also reduce the likelihood of attack by insects and diseases. The most common trees associated with iron chlorosis are pin oaks and silver maples. Other trees that are susceptible are sweet gum and baldcypress. White pine, sugar maple, red maple, sycamore, birch, swamp white oak, ornamental juniper and some crabapple are other common species that may develop iron chlorosis. It is a disease that can be treated and it may save your tree in the long-run.

Why does iron chlorosis develop? Iron chlorosis can occur if iron is either deficient in the soil or unavailable to trees. Under most circumstances, iron is plentiful in the soils in our region and is available to trees growing in soils with a pH of 5.0 to 6.5. In soils with a pH of 7.0 (neutral) or higher, iron is converted to an insoluble form that is less available to growing plants. Iron becomes limited at a pH of 7.5 and higher because the soil is “holding on” to the iron, making it unavailable for uptake by tree roots. High levels of copper, manganese or zinc in the soil and excessive applications of phosphorus fertilizer will also contribute to the problem. Treatment of iron chlorosis can be expensive so if you are planting new trees, selection of trees that are less affected by low iron availability is recommended. Some trees that are less likely to develop iron chlorosis include: bur or chinkapin oak, black or northern red oak, linden, hackberry, honey locust, Kentucky coffeetree, Ohio buckeye, spruce, fir, elm or ginkgo.

Iron is very important in producing chlorophyll, the green pigment in leaves. If there is a deficiency in iron, less chlorophyll is produced and a yellowing of leaves occurs. On deciduous trees, the leaf veins remain green while the area between the veins is yellow-green to yellow. Leaves that emerge later in the year may be smaller and more yellow. Under severe cases the leaves may turn white and finally brown. If left untreated, branches may dieback and the tree may eventually die after several years.

How do I know if my tree has iron chlorosis and what can I do about it? Soil testing is the easiest method to determine your soil pH and other nutrients available to the tree. This should be done before any treatment for iron chlorosis. Take soil samples to about a 6-8 inch depth at several locations around the tree and mix together. You need about a pint of soil for testing. The Nemaha County Extension office has a list of commercial laboratories where you can have your soil tested.

If a high soil pH is confirmed there are several methods to provide iron to your tree. Adding iron through foliar application, soil amendments, trunk injection and trunk implantation are methods of treatment. If a rapid response is needed, foliar application may be applied to the leaves when the tree is fully leafed out. Soil treatment by adding iron, in the form of ferrous sulfate and also lowering the pH with the addition of sulfur is a more permanent way of correcting iron chlorosis; unfortunately it is more difficult. You need to drill several holes in the soil, add the mixture of ferrous sulfate and sulfur and cap them off with soil. Iron compounds may also be injected or implanted into the trunk to correct the problem. If you have trees that were a problem last year, be on the watch and treat them if needed. Generally once a tree exhibits symptoms of iron chlorosis, it will ALWAYS need to be monitored for further issues of chlorosis. There are certified arborists that can also help you with the problem of iron chlorosis. A valuable resource on this issue from the Nebraska Forest Service can be found at, <https://nfs.unl.edu/publications/chlorosis-trees-eastern-nebraska> . For information on trees, other horticultural questions or agronomic questions, feel free to contact me at the Nemaha County Extension office at (402) 274-4755.

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