Tree Tips Column for August 8, 2003
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Iron Chlorosis of Trees

A common occurrence of pin oaks and silver maples in northeast Nebraska is a yellowing appearance and eventual dieback. These two trees are especially susceptible to a condition called iron chlorosis. This yellowing of the leaves occurs first between the green veins. More severe symptoms include smaller than normal leaves that turn pale yellow and develop angular brown spots. Leaf margins may turn brown. The leaf eventually curls, dries up, becomes entirely brown and falls. Tips of affected branches may die. Iron chlorosis is most common in areas of heavy clay soils; disturbed, compacted soils ;and soils that have a high pH (alkaline).

The pH is the measure of "acidity" of the soils and can range from a scale of 0 to 14. Neutral soils have a pH of 7. Most trees grow best in slightly acidic soils within a pH range of 5.0 to 6.5. Our dry prairie soils are more likely to be alkaline in nature with some soils having a pH higher than 7.5. In the higher alkaline soils the iron in the soil becomes insoluble and is less available to growing plants.

Chlorosis is often most serious in urban plantings because lawn soils frequently come from basement excavations. The lime (calcium) content of many of these subsoils is high. Irrigating over several years with hard water also provides additional lime, intensifying the problem. This causes problems with some trees that can not get the iron from the soil. The failure of a tree to use iron results in the leaves not producing the normal amount of green pigment. This pigment, known as chlorophyll, is necessary for growth and development of all higher plants.

The two most common methods of correcting this lack of iron for trees is either by applying additions to the soil to lower the pH or by trunk injections into the main stem of affected trees. The soil treatment involves spreading ferrous sulfate and sulfur under the dripline of the tree to create a more acidic soil. This is the more complete way to correct the chlorosis problem but is also the slowest method to get results. However, when it is effective, a single treatment may last up to three to four years depending on soil conditions. In addition, no injury is done to the tree.

The trunk injection entails drilling holes at the base of the tree and injecting chemicals or placing implants. This does create small injuries at the point of injection, but rarely harms the tree. This method results in more rapid response and green up of the tree. It usually does not last as long as the soil treatment. This material can be purchased at garden centers and tree nurseries or have the owner can have it done professionally.

The local UNL - Cooperative Extension office has a NebGuide titled "Iron Chlorosis of Trees and Shrubs, G94-1218-A " that discusses this ailment of trees.