Yard and Garden 07-04-2015 Ted Griess / Extension Horticulture Assistant

Red, white, and blue should be the colors of the day, but, of late, the colors in question are yellowish-green.

As seen in years past, homeowners are again noticing this tell-tale sign in the leaves of certain trees. These faded yellow-green leaves are usually the result of an abiotic condition. For those not familiar, abiotic means environmentally-caused. This peculiar leaf coloration is commonly called iron chlorosis. The tree is likely deficient in iron, thus diagnosed as being chlorotic, similarly in nature to the way we humans can be diagnosed anemic. Iron chlorosis is exacerbated by high pH soil (alkali soils), heavy rains, cooler temperatures, compacted soil, over-watering and fertilizing, or sometimes deficiencies in manganese or other micronutrients.

Certain trees are more susceptible to this condition than others. Maples in general seem to be the most commonly affected by this condition; however, other trees susceptible include crabapple, hawthorn, pear, cottonwood, pin oak, red oak, bald cypress and catalpa.

Symptoms of iron chlorosis are leaves that appear to be yellowish-green in the margins with dark green veins. Often the tips of the margins appear brown due to scorching and drying winds. When chlorosis occurs only on an occasional basis, it does little harm to the tree; however, if it re-occurs season after season, the tree will often experience significant branch die back. Severely affected trees may eventually die over a period of several years.

Iron chlorosis is difficult to correct. One can choose from three methods: (1) Trunk Injection, (2) Foliar Spray, or (3) Soil Treatment.

Having a chlorotic tree injected with chelated iron (water soluble iron) is a rapid way to correct iron chlorosis. However injection is usually good for only a year or two. Then, it needs to be repeated. Should a homeowner choose treatment by injection, I strongly encourage utilizing the services of a qualified arborist. Unfortunately, each

time a tree is injected the tree is wounded, increasing the potential for secondary problems —especially if done incorrectly.

A foliar spray with iron sulfate or chelated iron is also a relatively quick treatment, but it's a temporary solution affecting only the leaves that are contacted with the spray and not future leaves. With this method, having the proper equipment to carry out such a task can also be a problem, especially if the tree is large.

It took thousands to millions of years to create a soil profile. The soil in central Nebraska is generally high in pH, otherwise known as alkaline soil. Changing its profile from alkaline to acidic can be a challenge. Although soluble iron and other micronutrients are likely available in our soil, the high pH makes those nutrients nearly impossible to be accessed by the tree. Most trees prefer a pH range of 5 to 7, a slightly acidic to neutral range. Changing the soil's pH to be more acidic will solve the problem. Iron sulfate and other micronutrients are often used in combination with elemental sulfur to correct chlorosis. Typically, these materials are applied in holes dug or drilled into the ground around the tree. This method is labor-intensive and may be slow to work, but it can provide several years of control.

To learn more about correcting chlorosis, I suggest logging onto the Nebraska Forest Service's web page at **www.nfs.unl.edu** While there, click on NFS Publications and download their brochure titled ***Chlorosis of Trees in Central and Western Nebraska.*** This brochure provides detailed instructions on how to treat the soil for iron chlorosis. A brochure is also available at no cost by stopping by the Extension office.

When considering planting trees in the future, I suggest planting varieties less prone to develop iron chlorosis. They include linden, hackberry, Ohio buckeye, Kentucky coffee tree, honey locust, white oak, and others.

In the meantime, hail to the colors of Red, White and Blue. Happy Fourth of July!