Yard and Garden 07-02-2011 Ted Griess / Extension Horticulture Assistant

Abiotic problems can be just as hazardous to plant life as disease and insect pests. Last week I wrote about the widespread concern over fungal rust in ash trees. This week's popular question focuses on maples.

What is wrong with my maple tree? The leaves are yellow instead of green.

If you are noticing this problem in your maple tree or trees, please pay heed. For those who have no maple trees, you may wish to stop reading; however, bear in mind, this problem frequently occurs in other species of trees and plants.

Although not always the reason, faded pale-yellow leaves occurring in maple trees might be the result of an abiotic condition. For those not familiar, abiotic means environmentally-caused. This peculiar leaf coloration is referred to as chlorosis, or a chlorotic condition. Chlorosis is frequently caused by a deficiency of iron in the plant tissues. Interestingly, however, it might also be caused by over-watering, over fertilizing, damage to roots, or deficiencies in manganese or other micronutrients.

Symptoms of iron chlorosis include yellow or pale-green leaves with dark green veins. Frequently, the margins of the leaves are drying and dying. If chlorosis occurs season after season, the tree will have significant branch die back. Severely affected trees may die over a period of several years.

Maples are not the only species bothered with chlorosis. Many herbaceous and other woody-stemmed plants suffer from chlorosis. Those trees often affected by chlorosis include red oak, pin oak, sweet gum, crabapple, hawthorn, pear, cottonwood, birch, catalpa, bald cypress, white pine and some junipers.

Although iron and other micronutrients are usually present in the soil in sufficient quantities, the tree is unable to utilize these nutrients. The reason for this problem is high soil pH. Soils in central Nebraska typically have high pH levels (alkaline soils). The high pH ties up the iron and makes it unavailable to trees. Most trees prefer a pH range of 5 to 7. One may quickly surmise that changing the soil's pH to be more acidic will solve the problem. Although that may be true, soil resists pH changes. Elemental sulfur added to the soil helps to lower the pH. Iron sulfate and other micronutrients in combination with sulfur are frequently used to correct chlorosis.

Directly injecting iron sulfate, iron citrate or iron chelate into the tree trunk is a quicker way to correct iron chlorosis. Although trunk injection systems are available to homeowners, I strongly encourage you to utilize the services of a qualified arborist.

Other maintenance practices such as avoiding overwatering, avoiding excess fertilizer and adding organic mulch around the tree will help to minimize chlorosis. One might also consider planting trees less likely to develop iron chlorosis. Those include most white oaks, linden, hackberry, honey locust, Ohio buckeye, and disease-resistant hybrid cultivars of the American elm.

To learn more about this abiotic condition, I suggest logging onto the Nebraska Forest Service's web page at **www.nfs.unl.edu** While there, click on NFS Publications. Under Forest Health, click on the brochure titled ***Chlorosis of Trees in Central and Western Nebraska.***

By the way, while visiting this site, you might click on the next brochure entitled, ***Abiotic Problems of Trees*****.** Reading it may prepare you for future environmental problems as well as those problems we humans can cause.