

## Iron Chlorosis

By Kathleen Cue, Nebraska Extension Horticulture Educator

Pin oak and river birch are trees that can suffer from iron chlorosis, a condition of yellow leaves due to a lack of sufficient iron in the plant. Iron is necessary for good plant health and soils in this area have sufficient iron in the soil. The glitch comes in when the soil's pH (the measure of a soil's acidity or alkalinity) is high. 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.

A quick plant physiology lesson is necessary here to understand why trees decline from iron chlorosis. (I promise the lesson will be painless.) Chlorotic leaves are less photosynthetically efficient. These leaves make less carbohydrates than their green counterparts. Because leaves are the photosynthetic factory of a tree, each leaf must make enough sugars for its own functions AND enough to pass along to the twig, then the branch, then the trunk and finally to the roots. Each plant part partakes of the sugars to complete their own functions then passes along the surplus. A tree is well aware when a leaf isn't photosynthesizing enough to complete this pathway. The tree will withhold sending water and nutrients to these leaves because they are using more energy than they are producing. Leaves die and, as iron chlorosis continues unabated, branches die. Eventually the whole tree can succumb.

Fortunately there are treatments that are highly effective. Iron Injections are a good rescue measure for trees with 25% or more of the canopy made up of chlorotic leaves. This can be done in the spring. There is no advantage to injecting trees with iron now because much of that iron will be lost when the leaves are shed this fall. The better long-term fix is one that does not entail injury to the trunk. Yet this year, begin the process to lower the soil's pH by applying granular sulfur to the soil. By lowering pH, iron is released into the soil solution so roots will have access. A soil test by a soil testing lab is necessary to determine your soil type (whether it is sandy or clay) and the soil's present pH. This will dictate how much granular sulfur to apply. Once this information is known, you can check out application rates by accessing the Nebraska Forest Service website at [nfs.unl.edu](https://nfs.unl.edu).

<https://nfs.unl.edu/documents/foresthealth/chlorosis%20brochure%20west%202010%20Sep.pdf> .

It's been my experience that once a tree exhibits symptoms of iron chlorosis, it will ALWAYS need to be monitored for further issues of chlorosis. It does not go away on its own and one treatment is not a forever treatment. Again, while injections are a stopgap measure, the best fix is the noninvasive granular sulfur application to the soil. Because our bedrock is limestone, which pushes pH upward, consider applying some granular sulfur every other year to stay on top of this.

**The Extension Master Gardener horticulture helpline and open clinic hours are:**

Mondays, 9:00 am to 12:00 noon, Washington County Extension, 402-426-9455

Tuesdays, 1:00 to 3:00 pm, Cuming County Extension, 402-372-6006

Wednesdays and Fridays, 9:00 am to 12:00 noon, Dodge County Extension, 402-727-2775