

Missing Links in Soil Health

By Mir M Seyedbagheri

Science has always confirmed that a successful lawn and garden begins with healthy soil. The Extension office conducts regular soil testing in areas all over the county as well as in neighboring counties. It is important to note that 90% of horticulture and agriculture failure is linked to poor soil health. Soil is a living system, full of micro-organisms that are the keys to good quality soil. Other important factors for healthy soil are good aeration, drainage and a balance of all the essential elements. The macro elements are Nitrogen, Phosphorus, and Potassium. Secondary elements are Calcium, Magnesium and Sulphur. And finally there are micro elements; Iron, Zinc, Boron, Copper, Manganese and Molybdenum.

During the spring and summer, 30% of the tree and plant specimens brought to the office are showing from severe to moderate zinc and iron deficiencies. Soil type, nutritional deficiencies and moisture and temperature extremes can restrict or totally block an adequate supply of micronutrients to your plants.

In Elmore and Owyhee counties our soil pH varies from 7.2 to 8.5, which is an alkali calcareous soil. An excess of bicarbonates in our soils is the major factor in limiting zinc and iron. Iron deficiency is characterized by a distinct pattern of chlorosis developing first on the actively growing leaves on shoot tips. Major and minor veins remain dark green while interveinal tissues turn yellow to near white.

The first symptom of zinc deficiency is a light green color appearing on older leaves. As it becomes more severe, leaf growth at the shoot tips is greatly reduced. Growth generally will be delayed the following spring, and extensive shoot dieback occurs. If a fruit tree is zinc-deficient, flower bud formation is reduced and any fruits that may develop are usually small and misshaped.

Why are iron and zinc so important to the health of your lawn and garden plants? Iron is essential for chlorophyll formation, which gives your plants a healthy green appearance. It also activates many enzymes, including nitrogen fixation and photosynthesis. Zinc is also very important for auxin enzymes which regulate plant growth.

In order to overcome zinc and iron deficiencies, foliar or soil applied zinc and iron can be used. You can purchase fertilizer that includes these elements along with Nitrogen, Phosphorus, and Potassium. You can also purchase fast-acting liquid chelated iron and zinc. Based on years of experiments in our area, the most effective way to deliver these nutrients to your plants is to deep root feed. Make small holes, using a soil probe, in various places around your trees and shrubs. Mix your liquid zinc and iron with 5 gallons of water and fill the holes. Water very thoroughly afterwards. Repeat this process in 4-5 weeks. Soil probes can be borrowed from the Extension office located at 535 E Jackson. If you have any questions about this article or any horticulture issues, you can email us at elmore@uidaho.edu or call us at 208-587-2136 ext. 509.