

Recognizing and Correcting Iron Deficiency

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Figure 1: Iron deficiency is most severe toward the tips of branches. When iron deficiency is very serious leaves can scorch and branches can die back. This is a picture of a serviceberry plant.

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Iron deficiency is a very common problem in the gardens of the Treasure Valley of southeastern Oregon and southwestern Idaho. Typically, the

symptoms are very yellow leaves toward the growing points of the branches. The leaves closest to the branch tip may turn white and even scorch in hot weather (Figure 1). Sometimes only certain branches of a plant are affected. The symptoms vary by the type of plant that is affected.

Why does iron deficiency matter?

Iron is an element that is essential for various plant processes. Without iron chlorophyll does not form in the leaves.

Why does iron deficiency occur?

Often the soil is not deficient in iron. The iron in the soil is not available because the soil is alkaline and the iron in the soil precipitates into an unavailable form. Many of the soils in the Treasure Valley of southwestern Idaho and southeastern Oregon are alkaline and create iron deficiency. Other contributing factors to iron deficiency are cold soils in the spring, waterlogged soils, or soils that are high in calcium. These conditions contribute to very low iron availability.

How can iron deficiency be corrected?

Iron deficiency can be partially corrected by applying foliar sprays of iron products. Foliar sprays are usually not very effective because leaves do not absorb iron very well. Most iron containing products applied to the soil do not remain available for very long. Certain types of chelated iron can be applied to the soil, and will remain available for a month or two. The sequestered forms of chelated iron (such as Sprint 138) are often most effective. The soil often already has adequate iron, it is just

not available. A long-term solution to iron deficiency is to change the soil pH so that the soil becomes neutral and the iron becomes available to plant roots. This is accomplished by modest applications of sulfur. Sulfur can be applied at one to 2 ½ pounds per hundred square feet. This is equivalent to 450 to 1,000 pounds of sulfur per acre. Pelleted agricultural sulfur is safer to apply than powdered sulfur. In very alkaline soils, a number of annual applications of sulfur are required to neutralize the soil pH. Elemental sulfur is used by certain soil bacteria and converted into sulfuric acid, which will slowly reduce the excess alkalinity in the soil.

Why not apply enough sulfur to change the pH all at once?

If a large amount of sulfur is added to the soil at one time, substantial amounts of sodium can be released from the soil. If the soil contains a great deal of sodium, the sodium can be toxic to the leaves and cause browning on the edges of the leaves.

Iron deficiency on onion

Iron deficiency can occur on Treasure Valley onions early in the growing season. Iron deficiency is characterized by very yellow new leaves. It is most apt to occur on alkaline soil, when the soil is cold in the early spring and the onions are being over-watered. Alkaline irrigation water can aggravate iron deficiency.

Iron deficiency on various plants

Iron deficiency on various plant species follow (Figures 2-11).



Figure 2. Iron deficiency symptoms on rose.



Figure 3. Iron deficiency symptoms on spirea.



Figure 4. Iron deficiency symptoms on violet.



Figure 5. Iron deficiency symptoms on lupine.



Figure 8. Iron deficiency on daylily.



Figure 6. Iron deficiency symptoms on apple.



Figure 9. Iron deficiency on hydrangea.



Figure 7. Iron deficiency on pear.



Figure 10. Iron deficiency on raspberry.



Figure 11. Iron deficiency on peach.

If you have further questions on identifying iron deficiency, visit with your local experiment station, extension office or crop consultant personnel.

Disclaimer: The intent of this document is to share the findings of the OSU Malheur Experiment Station in regards to correcting iron deficiency. Its intent is not to endorse any product or criticize competing products.

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