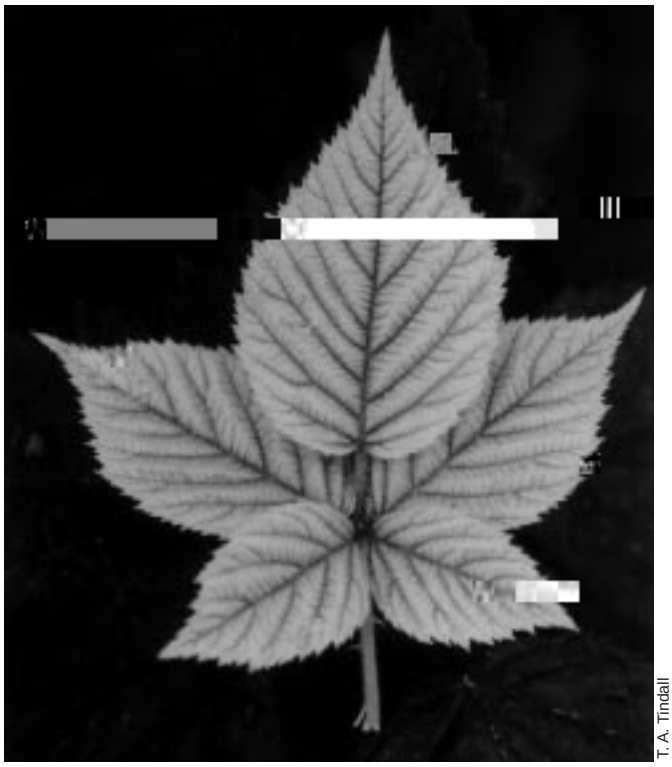
# Controlling Iron Deficiency in Idaho



T. A. Tindall

*Plate 1. Green veins and yellow interveinal tissue of iron deficient raspberry growing on southern Idaho alkaline soil.*

T. A. Tindall

*Plate 2. Severe iron chlorosis causing necrosis (dying) in developing tissue. Continued problems will result in loss of entire limbs or plants.*

prior to fully emerged leaves. As a general rule, all iron compounds should be applied with a nitrogen source as well as a small amount of wetting agent ($^1/_2$ tablespoon / 1-gallon solution) to increase product efficiency. This will assure quick and rapid uptake of the iron material. Most recommendations for chelates suggest the material be dissolved in water or a solution fertilizer prior to application. Fe- EDDHA should be applied around the drip line of a tree or in a band at the base of small berries (e.g. strawberries).

A more precise application method of Fe-EDDHA used by some growers and home owners is drip irrigation. Effective rates of application through the drip system have been reduced to 0.01 to 0.02 lb of Fe-EDDHA / tree / year (3-to 4-inch caliper). The iron material is mixed in solution and stored in a small plastic tank, then injected into the drip lines (venturi injector costs about $20.00 in 1996). There are a large number of very active roots in a small area under drip systems that increases the efficiency of the chelated iron. Drip irrigation makes chelates more attractive and easier to use. The greatest limitation, however, is its relatively high cost.

*Acidulated soil amendments* are produced in Arizona under the brand name of Iron-sul. This product has a pH of about 2 and has been moderately effective in controlling iron chlorosis for fairly long periods of time. The Iron-sul material is best applied by shallow trenching around the plants and should be applied in the bottom 1 to 2 inches of the trench. Cover the trench with soil and water thoroughly. Avoid contact with cement work such as driveways or walkways, because the materials will result in iron-colored stains.

### Foliar application of iron

Iron compounds that can be sprayed on leaves and tissue respond to iron chlorosis in a matter of days. Repeat applications every 2 to 3 weeks are almost always necessary to treat new foliage because of the limited translocation of iron nutrients within the plant. A 3 percent ferrous sulfate solution is recommended from the inorganic sources of iron. The solution can be made by mixing 4 oz of ferrous sulfate per gallon of water, or 24 to 25 pounds per 100 gallons of water. The first application should be made about

3 weeks after leaves appear. Spray to complete saturation as the tree approaches full leaf. For best results, spray in the early morning hours when the tree is most likely to utilize the material. Applicators should add a few drops of a wetting agent to each gallon of water used. Ferrous sulfate solutions should not be stored after mixing because of the oxidation of the Fe, which results in the iron settling out of solution making it unavailable to the trees.

Chelated forms of iron can also be applied foliarly. The most common foliar-applied chelate is Fe-DTPA, which is manufactured by the Ciba-Plant Protection Corporation and marketed as Sequestrene 330 Fe. All chelated iron materials that are foliar applied will require repeat applications every 2 to 3 weeks. Two products that have proven fairly effective for the control of iron