Diagnosing Nutritional Disorders

Physiological disorders of trees and shrubs (those not caused by insects or diseases) include mechanical damage, weather related injury, soil drainage problems, and nutritional disorders. If insects and diseases have been eliminated as possible causes of the disorder, then look to soil nutrients. Deficient, excessive, or unbalanced soil nutrients may be at fault. Nutrient problems generally develop slowly. They can affect all the plants of one species in a given location, although a different species may not react the same.

For instance, pin oak in an alkaline soil may become chlorotic, while other oaks, maples, etc., appear to be unaffected.

The following table describes symptoms associated with nutrient excesses or deficiencies. Keep in mind that the plant's symptoms may indicate either a true soil imbalance, or a condition of inhibited or enhanced nutrient uptake. Soil testing and tissue analyses may be needed to verify the physical symptoms.

Transplanted stock stunted, growth uneven:
low N, P, Ca, Mg; Excess Ammonia, excess total soluble salts.

Leaves smaller than normal:
low Mn; excess Cu, Mn.

Leaves chlorotic between veins, veins green:
low Fe.

Leaves chlorotic between veins, small veins yellow, large veins green:
low Mn, Zn, Mo.

Leaves chlorotic between veins; some veins yellow:
low N, Mg.

Youngest leaves chlorotic:
low Ca, S, Fe, Mn, B.

Oldest leaves have necrotic spots:
low P, K, Mg, Mn; excess K, soluble salts.

Leaves distorted:
low S, B, Cu; excess B, soluble salts.

Terminal necrosis:
low Ca, P, Cu.

Terminal necrosis after severe chlorosis:
low Fe.

Wilting:
low B, Cu.

Leaf veins colored:
pinkish — low N; purplish — low P; redish — low S.

Premature leaf drop:
low N, Mn; excess B, soluble salts.

Marginal scorch older leaves:
excess soluble salts.

Plants unthrify, growth slow, stunted:
low N, P, K, S, Fe, Cu; excess soluble salts.

New growth stiff, hardened off:
low P; excess K.

New growth soft, weak:
low S; excess N.

Poor root development:
low P; excess soluble salts.

Discolored roots:
excess soluble salts.

Root dieback:
excess soluble salts, N, ammonia (poorly drained soils).

Credit: OGA Notes Fall '83

At the recent Annual Meeting of the National Arborist Association, NELS J. JOHNSON TREE EXPERTS, Inc., Evanston, IL, received the award for an outstanding performance in safety for 1984. This is the second consecutive year that Nels Johnson Tree Experts, Inc., has received this award. The safety award is given to that firm which has the lowest incidence rate of accidents, nationwide, in the tree care industry.

Only those firms with extensive training programs are eligible.