

# Leaf discoloration means manganese deficiency

If some of your trees have yellow or brown leaves at midsummer, it is probably a sign of curable manganese deficiency, so don't resort to the chainsaw.

Trees most affected by this problem include sugar maple, red maple and to a lesser degree, Norway maple. It may also occur in birch, mountain ash and sweetgum. The deficiency seems to be spread throughout the northeast.

Manganese, not to be confused with magnesium, is an essential mineral for good tree growth. The deficiency primarily appears in the form of chlorosis (yellowing) of new leaves. They turn brown by midsummer and drop earlier than usual in the fall. The symptoms are most pronounced at the ends of twigs and at the tree crown.

(Though this is the immediate effect of the deficiency, the whole tree will weaken with age and could eventually die from this or other causes," says researcher James Kielbaso, MSU shade tree specialist.

Trees growing in natural wood-

lots and other undisturbed soils do not show the problem. Most prone to the deficiency are trees along highways and in urban and suburban areas where much of the topsoil has been removed and organic materials—such as rotting leaves—are not returned to the soil.

Where the problem exists the soil is high in pH (alkaline) and in this situation manganese is unavailable to the tree. As a possible remedy, trees can be sprayed with manganese solution or implanted with capsules containing manganese. Spraying with a manganese solution is still fairly expensive. For best results trees should be sprayed twice a year.

A manganese implant is more practical and effective. Manganese capsules, available as Medi-CAP, may be bought at garden stores and from professional arborists.

The implant is made by simply drilling a hole in the tree the same size as the capsule and deep enough to go below the cambium, which is just

below the bark. Insert the capsule: as the sap moves up the tree, the contents dissolve and the manganese becomes available. For best results, the application should be made early in the spring and can be repeated every two to three years depending on severity of deficiency.

Watering during drought periods and fertilizing with acid-reaction fertilizers encourage tree vigor and are beneficial as supplements to the manganese implant.

Research in this area is still going on, but Kielbaso feels this is an effective solution.

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