



FERTILIZING URBAN TREES

Insect and Disease Laboratory • 168 State House Station • 50 Hospital Street • Augusta, Maine • 04333-0168

Trees planted in an urban environment are subjected to a wide variety of stresses. For example a tree planted in a small green area between a sidewalk and a road or a building and a road can become restricted in its ability to gather the necessary amount of nutrients needed as the tree grows in size. Soil compaction resulting from vehicle traffic or excessive foot traffic over the roots of a tree can cause root damage which will also hinder its ability to collect nutrients. Or maybe some mechanical wounding agent - lawn mower, car, snowplow, etc. - has visually scared a tree causing an interruption in the movement of nutrients between the roots and the crown.

What can be done to help a stressed tree? One useful tool is the proper use of fertilizer.

What commercial formulation of fertilizer is best? It has been said there is no best fertilizer, but it is generally agreed that a complete fertilizer with a high nitrogen content is necessary. Complete fertilizers have a minimum of 20 units of the three important elements - nitrogen, phosphorus, and potash. Commercial fertilizers such as 10-6-4, 10-10-10, 7-8-6, or 10-5-5 are some of the suitable mixtures. The first number of a complete fertilizer analysis denotes the nitrogen, the second, the phosphoric acid, and the third the potash.

How do each of these elements affect a tree? Nitrogen influences rate of growth of cells and thus helps produce healthy twigs, wood and foliage growth. Nitrogen also helps a tree to synthesize chlorophyll, a deficiency of which results in chlorotic foliage. Phosphorus aids root growth and in making stored carbohydrates available for spring growth. Potassium or potash helps in the formulation and movement of sugars and starches and strengthens, toughens and matures the tree's parts.

Organic fertilizers (plant or animal materials) are good for trees and do add humus to the soil but their benefit to the tree is much slower although longer lasting than chemical fertilizers.

After the right formulation of fertilizer has been selected, the question arises "how much is needed"? For large trees the amounts generally used are three pounds of fertilizer for each inch in diameter at breast height of the tree. For small hardwoods use one to two pounds per inch*.

How should the fertilizer be applied? Since it is desirable to get all elements possible to the roots, the usual method is by perforation of the soil. Due to little lateral movement of the fertilizer in the ground, the holes should be spaced closer together (12-15) inches) and farther out beyond the spread of the branches when fertilizing trees in poor condition. A second method is by surface fertilizing and cultivation which is best used on porous soils and for shallow-rooted trees. This method consists of broadcasting the fertilizer over the root area, and raking or hoeing it into the shallow surface. In fact, simply broadcasting fertilizer over the root area as in fertilizing lawns shows good results on trees in good-porosity soil. With the use of commercial apparatus some fertilizers can be put into the soil by pressure, which gives the added important advantage of loosening and aerating the root-soil area. Regardless of which method is used to fertilize a tree it is highly important to follow-up with a thorough watering of the soil, especially in dry periods. Moisture is necessary to put the fertilizer elements into solution to make them available for root absorption.

When should trees be fertilized? It may be done in the spring to early summer and in the fall after leaves have dropped. These are the two periods of most rainfall and soil moisture. Trees should not be fertilized in late summer because this will result in additional development of tender growth which won't have time to harden-off before cold weather arrives, thereby allowing winter injury.

Stressed urban trees occasionally need help. By first determining the type of stress being placed upon the tree the proper type of fertilizer can be selected. When applied at the proper time, at the proper dosage rate, and administered so it reaches the roots in solution, this fertilizer can help a stressed tree to return to a healthy state.

* This dosage rate is based upon former mentioned formulations of commercial fertilizer. If the formulation of fertilizer selected is higher in nitrogen, then reduce the amount of total fertilizer used. For further information contact the Insect & Disease Laboratory, 50 Hospital Street, Augusta, ME 04330-6514.