RESEARCH LABORATORY TECHNICAL REPORT

BARTLETT TREE EXPERTS
SCIENTIFIC TREE CARE SINCE 1907

Why Fertilize Landscape Trees?

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Trees and shrubs require 17 different elements. If they lack one or more of these nutrients, the tree may become less healthy and more susceptible to pests and other problems.

Nutrient deficiencies occur for a number of reasons in the urban environment. Most new construction starts with the removal of topsoil from the entire building area. This means that when the landscape is planted at the end of construction, the plants grow into low nutrient subsoil.

Figure 1: Fertilizer is injected into the soil for better nutrient distribution

Figure 2: Soil sampling for nutrient analysis

On established sites, the annual removal of fallen leaves reduces the level of nutrients that are returned to the soil whereas in forest conditions, fallen leaves would break down releasing nutrients to the soil. Nutrients applied to turf grasses are not always beneficial to trees. Turf requires a higher pH than most tree species, so annual lime applications may be detrimental to trees surrounded by turf.

Fertilizer should be applied only when there is a known deficiency (Figure 1). Readily available and reliable laboratory soil and foliar nutrient analyses are superior to visual analysis of leaf color and twig growth at detecting deficiencies and the underlying causes of some deficiencies (e.g., soil pH). Lab analyses can also detect secondary element (e.g., Ca, Mg, Mn) deficiencies or excesses that are overlooked with visual analysis (Figure 2 and 3).

Figure 3: Non-fertilized trees on left and fertilized on right

Key points from the International Society of Arboriculture's *Best Management Practices: Tree and Shrub Fertilization*

- Fertilizer should be applied only when there is an identified nutrient deficiency.
- Fertilization goal should be clearly defined: Growth, overcoming deficiency, maintaining health.
- Nitrogen source should be at least 50% Water Insoluble Nitrogen (WIN).
- Fertilizer Salt index should be less than 50.
- Slow release fertilizers can be applied at any time of the year.
- Avoid application during droughts.
- Soil apply fertilizer 4 to 8 inches deep. Space holes 24 to 36 inches apart.
- Apply from near the trunk to near the drip-line. The most important area is near the trunk.
- Fertilizer rates should be based on soil nutrient analysis.
- Apply 2 to 6 pounds of nitrogen per 1000 sq.ft. depending on goal and application frequency.
- Trunk inject fertilizers only when soil application is ineffective, such as for micronutrient deficiencies (iron or manganese).

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