



FERTILIZING WOODY PLANTS

Most mature woody trees and shrubs established in the landscape and growing in a healthy manner need little or no fertilization. In fact, fertilizing healthy trees can be detrimental by encouraging excessively vigorous growth that unnecessarily increases plant size and foliage density, produces succulent weak growth, and predisposes the plant to diseases, pests, and environmental stresses. In addition, excessive fertilizer is a significant contributor to groundwater contamination of aquifers. Do not fertilize plants unless they need it.

In most cases, trees and shrubs growing poorly in the landscape do not need extra fertilizer since the causes of their poor growth are usually not nutritionally related. Fertilizers may be helpful but only after the problem(s) causing poor growth are corrected. Poorly growing plants may exhibit one or more of the following symptoms:

- light green or yellow leaves
- leaves with dead spots
- smaller leaves than normal
- fewer leaves or flowers than normal
- stunted twig growth or dieback
- wilting

Any number of problems may be responsible for these symptoms, including compaction, poor soil drainage or aeration, improper soil pH, diseases and pests, and adverse climatic conditions. Fertilizing will not remedy these problems.

In general, woody plants should not be fertilized at the time of planting, because fertilizer that is mixed with backfill or otherwise applied at this time may inadvertently injure roots. It is good insurance, however, to fertilize plants soon after planting. Fertilizing young, newly planted trees and other woody plants may promote more rapid growth so that the plants attain their optimal size more quickly. Fertilizing mature woody plants, vines, and ground covers is not routinely necessary unless plant vigor is low because of inadequate essential nutrients. As long as plants have good leaf color, leaf size, shoot growth, and canopy density, there is no need to fertilize them. In nearly all cases, however, if fertilizer is needed, only nitrogen is necessary, because other nutrients usually occur in adequate amounts in most soils. A notable exception are palm trees, which need potassium in nearly the same amounts as nitrogen. Potassium deficiencies often occur in palms growing on sandy, well-drained soils and those subject to frequent, heavy irrigation, such as occurs in turfgrass areas (see the discussion under “Fertilizing Palms,” below).

The use of complete fertilizers (those containing nitrogen, phosphorus, and potassium) is usually not recommended for woody plants because soils are rarely deficient in all three elements. Even if such conditions did exist, it would be difficult to amend the soil satisfactorily with a complete fertilizer. For example, in a potassium-deficient soil, using a complete fertilizer to apply enough potassium would apply too much nitrogen.

Application to the soil surface is the easiest, quickest, and most effective method of applying nitrogen to woody plants. Slow-release forms (organic or synthetic) are usually more expensive than other nitrogen sources, but their use may be justified when application is difficult or must be frequent, because they can be applied less frequently at higher rates. A less concentrated but more continuous supply of nitrogen is available with slow-release forms that have less likelihood of loss by leaching.

Newly planted, young (less than 2 years old) woody plants and ground covers in the landscape may be fertilized according to the recommendations in [table 13.5](#). When established plantings of trees, shrubs, vines, or ground covers need fertilizer, evenly broadcast about 1 to 3 pounds (0.45 to 1.4 kg) of actual nitrogen per 1,000 square feet (93 sq m) of planted area (shrubs, ground covers, vines) or per 6 inches (15 cm) of trunk diameter (trees) when plants need it most, usually just before the period of most rapid growth in the spring. Double this rate for trees growing in turf areas, but split the total amount applied into two applications about 6 weeks apart. In either case, a second application about 2 months into the growing season may be beneficial. Wash any fertilizer off foliage and keep it away from the trunk or stems of plants. On slopes where fertilizers may be subject to erosion or rolling away, it is best to dibble the recommended amount of nitrogen into 10- to 12-inch (25- to 30-cm) deep holes 2 to 3 feet (60 to 90 cm) apart. Follow any fertilizer application with one or two thorough irrigations to move the nutrients into the root zone.

Micronutrients are usually present in the soil in sufficient quantities for adequate plant growth. High pH (above 7.0) and any situations that decrease root activity, such as low soil temperatures and damage from disease or poor aeration, may render these nutrients unavailable to plants, and deficiency symptoms may occur. For example, acid-loving (low-pH) plants such as gardenias and azaleas are susceptible to iron deficiency on heavy clay or alkaline soils, especially during cool winter months when soil temperatures are lower. Most plants will grow out of these symptoms with the advent of warmer weather and increased root activity.

Fertilizing Palms

Palms require large amounts of nitrogen, potassium, and magnesium and appear especially sensitive to certain micronutrient deficiencies. Macronutrient deficiencies usually occur as a result of insufficient nutrients in the soil. Nitrogen deficiency appears as a general yellowing of all leaves. Potassium and magnesium deficiency appear on the older leaves. Potassium deficiency shows as translucent orange or yellow flecking or speckling, and magnesium deficiency appears as a distinct orange-colored band around the outside of a leaf. Micronutrient deficiencies are on the newest leaves and are usually the result of environmental factors such as damaged roots or improper soil pH that affect the palm's ability to extract the nutrient from the soil. Iron deficiency shows as chlorosis, and manganese deficiency appears as chlorosis, stunting, and even frizzling. Deficiencies are more easily prevented than corrected by proper fertilization, good soil aeration, proper planting depth, root disease prevention, and proper soil pH. Palms respond best to a fertilizer with the N-P-K ratio of 3-1-3 or 3-1-2, all in slow-release form, and with magnesium and micronutrients.

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