

### Landscape Fertilization:

Attractive trees and shrubs are important components of an Earth Kind landscape. Planned maintenance and care are essential for keeping these plant materials healthy and vigorous. A well thought out fertilization program is an important maintenance requirement. However, it is important that plants not be overfertilized and that fertilizer not be expected to overcome problems caused by the use of non-adapted varieties, improper planting techniques, poor soil drainage, soil compaction or incorrect watering practices.



In many yards, a good lawn maintenance program may eliminate the need for supplemental fertilization for trees and other woody plants in the lawn. Additional fertilizer would simply be a waste of money and might result in nutrient imbalances or increase the risk of contaminating surface and groundwater resources.

Occasionally, additional fertilizer is needed in areas where a tree's root growth is restricted by streets, curbs, or other structural features. Shrubs and vines frequently serve as screens or borders for lawn areas within the landscape. Consequently, these plants are frequently forgotten or neglected in the normal lawn fertilization program.



Plant signs indicating the need for fertilization include lack of terminal growth, pale green or yellow leaves, mottled leaves, dead branches, stunted leaves and early loss of leaves.

General tree vigor is determined by comparing the length of twig growth during the past 3 to 4 years. Young trees should have at least 9 to 12 inches of terminal growth per year. Large mature trees usually average 6 to 9 inches of growth. Shrub vigor is determined in the same way. Growth varies from season to season and from variety to variety.

Earth-Kind uses research-proven techniques to provide maximum gardening and landscape enjoyment while preserving and protecting our environment.

The objective of Earth-Kind is to combine the best of organic and traditional gardening and landscaping principles to create a new horticultural system based on real-world effectiveness and environmental responsibility.

The principal goals of Earth Kind include-

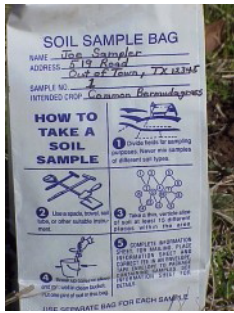
- Water conservation
- The safe use and handling of fertilizers & pesticides
- Reduction of yard wastes entering urban landfills
- Landscaping for Energy Conservation

As your interest and knowledge in these areas grows you will have an increased awareness of the many programs, practices and activities that are Earth Kind. Working together we can make a difference in conserving and protecting our valuable natural resources.



For more information  
see our Web site:

**EarthKind.tamu.edu**



## Obtain a Soil Analysis:

Earth Kind fertilizer recommendations should be based on a soil analysis. Instructions for taking a soil or leaf sample can be obtained from the county Extension office. Such analyses allow the application of fertilizers in amounts and ratios that minimize nutrient waste and the threat of pollution.

Without such analyses, general lawn fertilizer recommendations of 2 to 4 pounds of actual nitrogen per 1,000 square feet per year will meet the needs of most trees and shrubs. In turf areas, do not apply this amount at one time but rather make several applications to prevent fertilizer burn of the turf.

Proper timing of fertilizer applications has a marked effect on the growth of woody plants. In general, the best time to apply fertilizer is in the spring before growth begins.

Soil type also affects the timing of fertilizer applications. For sandy or loam soils, apply fertilizer as soil temperatures begin to rise and before growth occurs. For heavy clay soils apply the fertilizer in late fall after leaves have fallen or the plant is completely dormant.

The maximum growth response to the fertilizer is obtained if the fertilizer is available in the root zone at or slightly before the start of spring growth. In sandy soils fertilizer moves more rapidly into the root zone, whereas in heavy soils, it takes much longer for the fertilizer to penetrate.

Do not apply fertilizers from August 1 until late fall (about the time of the average date of the first killing frost). Late summer fertilizing can stimulate an excessive amount of new growth, making plants more susceptible to winter injury. In south Texas where freeze damage is slight, late summer fertilizer applications are beneficial and provide needed nutrients for late fall and winter growth.

Most fertilizers are purchased according to their analysis which is the percentage of the three major plant nutrients - nitrogen, phosphorus and potassium. The analysis is shown on the bag or container and consists of three numbers (i.e., 12-4-8). The first number indicates the percentage of nitrogen (N), the second gives the percentage of phosphorus as phosphoric acid (P2O5); and the third is the percentage of potassium as potash (K2O). A 50-pound bag of a 12-4-8 fertilizer contains 6 pounds of N, 2 pounds of P2O5 and 4 pounds of K2O.

Tree growth is limited by nitrogen deficiency more often than by lack of phosphorus or potassium. For this reason, it is recommended that a fertilizer with a 2-1-1 or 3-1-1 ratio be used for trees. Fertilizers with a 2-1-1 or similar ratio are readily available, including 10-8-6 and 12-6-6. If the desired ratio is unavailable, a 3-1-1 ratio fertilizer can be approximated by mixing 12 ounces of ammonium nitrate (33-0-0) to each pound of a 12-12-12 fertilizer. The same type fertilizer can be used on shrubs and vines (Table 1).

**Table 1.** The amount of nitrogen fertilizers needed to supply 1 to 2 pounds of actual nitrogen per 1,000 square ft.

Approximate pounds of fertilizer needed to supply:		
Material	1 lb N	2 lb N
Urea (45-0-0)	2	4
Ammonium nitrate (33-0-0)	3	6
Ammonium sulfate (21-0-0)	5	10
10-10-10	10	20
12-12-12	8	16
10-20-10	10	20
12-6-6	8	16
10-5-5	10	20
16-20-0	6	12
15-5-10	10	20
12-4-8	8	16
19-5-9	5.25	10.50

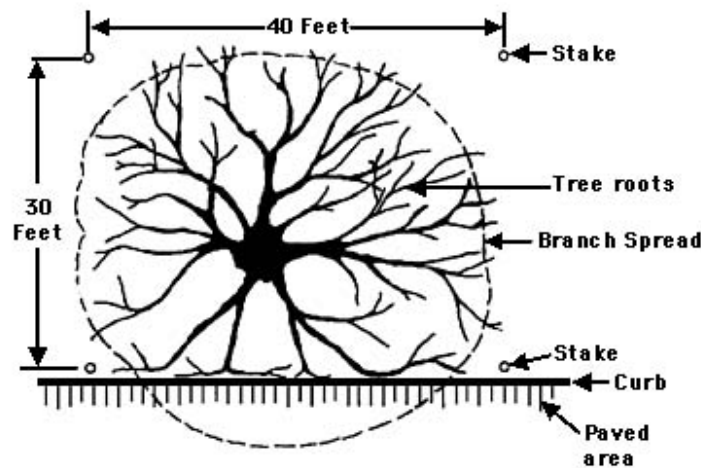
## Computing Amount of Fertilizer Needed:

To figure the amount of nitrogen-containing fertilizer needed for woody plants, stake off a square or rectangular area that includes the entire branch spread of the trees and shrubs in an area. If roots are restricted by pavement, curb or a building, subtract the restricted area from the total area computed (Figure2).

### Application Methods

Research shows that when fertilizing trees and shrubs, surface applications of nitrogen-containing fertilizers are as efficient as the old method of punching holes. Fertilizer may be distributed by hand or with a fertilizer spreader. Distribute the fertilizer evenly and avoid skips and overlapping which result in light and dark streaks in grass growing beneath the trees. To obtain even distribution, divide the fertilizer into two equal lots and apply one-half lengthwise over the area and the remainder crosswise over the area. Water the area thoroughly after fertilizing, soaking the soil to a depth of at least 6 inches.

If soil indicate a need for either phosphorus or potassium, place fertilizer in holes rather than on the surface because these materials penetrate too slowly to reach tree roots in adequate amounts when surface applications are made. Phosphorus or potassium applications are needed only every 3 to 5 years. In most areas of Texas, except possibly in the acid soils of East Texas, the amount of phosphorus and potassium in the soil is sufficient to adequately supply the needs of woody plants. Check with your county Extension office before applying additional phosphorus or potassium. See Table 2 for the amount of phosphorus and potassium-containing materials to use per 1,000 square feet of area if required.



**Table 2.** Amounts of phosphorus and potassium fertilizer materials needed to supply 3.6 pounds P<sub>2</sub>O<sub>5</sub> per 1,000 square feet and 6 pounds of potash (K<sub>2</sub>O) per 1,000 square feet.

Material	Quantity needed per 1,000 sq ft	Amount per hole based on 250 holes per 1,000 sq ft
Phosphorus (P) Superphosphate (0-20-0)	18 lb	2 tbsp
Triple superphosphate (0-46-0)	8 lb	1 tbsp
Potassium (K) Muriate of potash (0-0-60)	10 lb	1 tbsp
Nitrogen, phosphorus, potassium 10-20-10	18 lb	1/4 cup
12-12-12	30 lb	1/2 cup

## Fertilizing Evergreens in Alkaline Soils:

Evergreen plants generally require less fertilizer than deciduous plants. Most broad-leaved evergreens (magnolia, loquat, photinia, etc.) prefer an acid soil. To maintain these conditions, use acid-type fertilizers and avoid materials such as wood ashes, lime, fresh manure or bone meal.

Sometimes organic fertilizers are preferred for use around broad-leaved evergreens. Nutrients in these materials are released to the plant slowly and do not produce excessive growth. There is less danger of damage from overfertilization. Apply fertilizers such as cottonseed or soybean meal at 5 to 6 pounds per 100 square feet of planted area. Another organic-type fertilizer can be prepared using one part by weight of sulfate of potash or muriate of potash; two parts by weight of 20 percent superphosphate; and five parts by weight of cottonseed meal. Thoroughly mix the materials and apply at a rate of 2 to 5 pounds per 100 square feet of area under the trees or shrubs. Apply the fertilizer mix to the surface of work into the top few inches of soil, avoiding injury to the roots. One application every other year usually is adequate.



In general, the procedure previously outlined for fertilizing other woody plants is adequate for narrow leaved evergreen trees but reduce the amount by one-third. For best results, apply in early spring before growth starts.



## Micronutrients:

The micronutrient most commonly deficient in Texas soils is Iron. This deficiency usually is noted in alkaline soil regions. The iron becomes insoluble and the plant cannot extract sufficient amounts from the soil for good growth. Iron deficiency symptoms include pale green to yellow leaves with darker green venation. It is very common on plant species not adapted to alkaline soils including some of the red oaks, maples and hollies.

Iron deficiency can be corrected partially with foliar applications of chelated iron provided label recommendations are followed. If the soil is only slightly alkaline, use soil applications of iron sulfate or sulfur.

In general, woody plants adapted to the local area are usually very effective for growing in landscaped areas with well-maintained lawns. In the event that nutrient deficiencies occur, the practices described above will aid in maintaining strong, healthy trees.

## Protect the Environment:

Fertilizer applied in excess of plant needs or with improper timing often goes to waste. In the case of nitrogen and phosphorous, the excess material may find it's way in to surface and groundwater resources.

To reduce the risk of pollution, minimize the amount of fertilizer which ends up in the storm sewer by keeping fertilizer off the pavement and driveways. A small amount of runoff from each yard can add up to a major pollution problem for the neighborhood, county, state and beyond.

Insure optimum fertilizer use by following fertilizer recommendations based on soil analysis. By following these Earth Kind guidelines you will assist in preserving and protecting our valuable natural resources.



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