

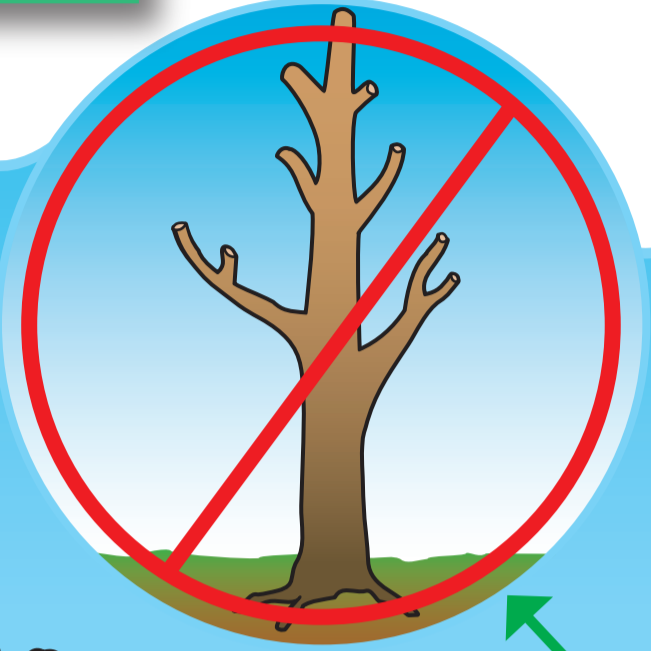
## Mulching

Mulch retains soil moisture and moderates soil temperature extremes. A 2- to 4-inch layer applied out to the tree's drip line is ideal. More than a 4-inch mulch depth can cause problems with oxygen and moisture levels. Avoid mulch "volcanoes". Keep mulch a few inches away from the trunk to avoid pest and disease problems. Mulch provides a well-cared-for appearance, while preventing damage from lawn care equipment. Trunk damage slows growth and can lead to borer infestation and wood decay as well as tree decline and death.



## Tree Establishment

The length of time for establishment of a tree depends on the original tree size and the growing conditions after planting. All trees experience transplant shock regardless of tree size when planted. During the period of transplant shock, both root and shoot growth are reduced. Vigorous growth does not return until the roots are established. A 1-inch caliper tree, with proper care, should develop an established root system by the end of the first year. A 4-inch caliper tree is larger and requires a minimum of 5 years to develop an established root system.



## Fertilization

Fertilizer and/or lime should be applied based on soil test results. Fertilization is not a "cure-all" for declining trees, but may be used to complement other tree maintenance activities. Younger trees benefit more from fertilization than older trees. In early spring, broadcast a slow-release fertilizer evenly over mulched and unmulched surfaces in the root zone area (out to 1 1/2 times the canopy radius). Fertilizer should always be applied to moist soil to improve uptake and to reduce the chance of root injury. Improper fertilizer type, rate, and application can injure plants.

1 1/2 times the canopy radius

## Pruning

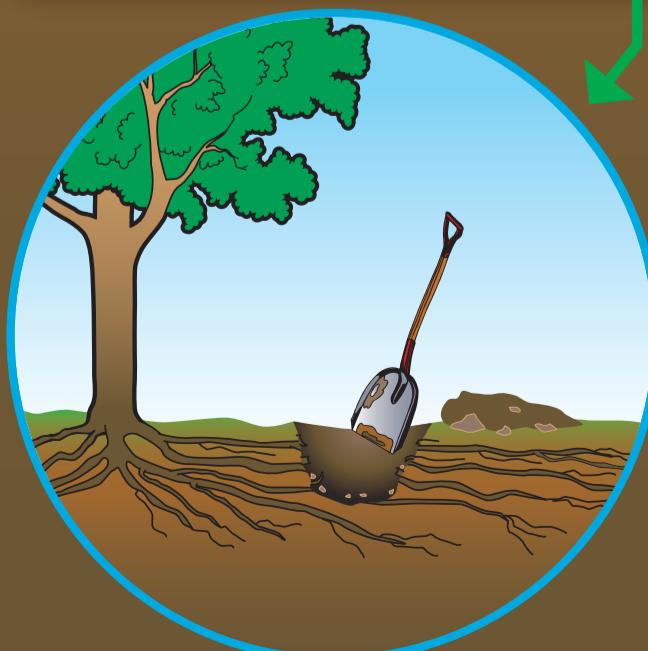
Pruning is not necessary the first year after planting. Structural pruning should be done every 2 to 3 years beginning in the second season and ending in the tenth year after planting. This will establish a strong, sturdy trunk with well-spaced branches, 12 to 18 inches apart. Trees that receive appropriate pruning while young will require little corrective pruning at maturity.

Never "top" trees. "Topping" is detrimental to both the natural appearance and overall health of the tree. If a mature tree needs pruning, always contact a certified arborist.

Mulch to drip line

## Construction Damage

Protect the tree roots from soil compaction, paving, or mechanical damage. Remember that tree roots extend 2 to 3 times the width of the canopy. Roots are required for structural stability and for supplying water and nutrients. The amount of damage a tree can suffer from root loss depends on how close the cut is made to the trunk. Severing one major root can cause the loss of 5-20% of the root system.



## Insect & Disease Monitoring

Monitor for pest problems on a regular basis and treat only if necessary. Some pests can damage or kill plants, but not all insects and disease organisms pose a significant threat or require treatment. By first identifying the problem, it can be determined if any treatment is necessary.

## Tree & Turfgrass Root Competition

Turfgrass roots colonize the top 2- to 3-inch layer of soil while tree roots are concentrated in the top 6 to 12 inches of soil. Because of these root depths, trees and turfgrasses compete for the same soil nutrients and moisture. Turfgrass may compete more successfully than the tree for water and nutrients, especially if established before the tree. Mulching eliminates some of this competition by allowing only the tree to use the nutrients and water applied under the tree. Most turfgrasses do not grow well in heavy shade anyway.

## Irrigation

Lack of water is often the cause of poor tree growth. Established trees should be watered at the first sign of wilting or when the top 12 inches of soil are dry. A good slow soaking over several hours is best and may be done with a low pressure sprinkler or soaker hose, starting at the trunk and extending beyond the furthest branch spread. Avoid over watering as too much water can kill a tree by eliminating the air from the soil.

