

Tree Problems Caused by People in the Suburban Landscape

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Introduction

Trees greatly enhance both our rural and urban environments because of their scenic, recreational, and comforting qualities. As a result, significant time, effort, and money are spent on planting and maintaining trees in the landscaping around homes, businesses, public buildings, streets, and parks. Although insect and disease problems are often unpredictable or unavoidable, many major tree injuries in the landscape are caused by people. It is important to be aware of these injuries, how to prevent them, and of methods for keeping trees healthy.

The following are some of the more common injuries and suggestions for avoiding them.

Improper Planting

Trees can be injured if improperly handled during planting or if planted at the wrong depth. Symptoms due to improper planting may occur soon after planting or not until several years afterward. Correct handling and planting techniques help to ensure survival of newly planted trees.

- Depending on tree species, plant in the early spring or fall.

- Prepare the planting hole properly so that roots are not cramped.
- Prevent roots from drying out before planting.
- Remove plastic and burlap wrapping on balled trees whenever possible. Plastic *must* be removed. Alternatively, after placing the tree in the planting hole, burlap should be loosened from around the trunk and/or cut away and removed from the top part of the ball, with the remainder left in place.
- Plant the tree at the same depth that it was growing in the nursery.
- Water immediately after planting (and periodically) for two seasons to maintain a moist, but not waterlogged, soil. Ideally, trees need about 1 inch of water every 7 to 10 days.
- Support the tree with rubber-protected guy wires attached to two sturdy stakes or poles. Support wires should be removed once tree roots have become established (usually within 2 years).
- Mulch soil at the base of the tree to maintain soil moisture, control weeds, and minimize



mower damage. Maintain mulching to a maximum depth of 2 to 3 inches.

- Do not fertilize when planting; wait until about 1 year after planting.

Improper Pruning

Pruning every 2 or 3 years helps to improve tree vigor and maintains an attractive, natural shape. Pruning is also done to remove dead or diseased branches, and to remove branches near utility lines and buildings. Properly pruned trees can rapidly form callous tissue to compartmentalize injured tissues. Improper pruning, however, creates excessive wounding that reduces vigor and predisposes the tree to attack by diseases and insects.

- Pruning can be done any time of the year, but pruning some trees in the spring results in excessive sap flow or “bleeding” that is considered unattractive. Check with your local cooperative extension office or nursery for the best pruning time for the species in question.
- Prune living branches as close as possible to the trunk or connecting branch, without cutting the branch collar. Make a smooth cut.
- Remove broken tops and branches as soon as possible after storm damage or other injury.
- Prune diseased branches anytime during the year, but do so only during dry weather. To prevent disease spread, cut 6 to 8 inches below the affected tissue with surface sterilized pruning tools. To sterilize tools, dip them in denatured (70%) alcohol or 10% bleach between cuts. Thoroughly wash and dry tools after use.

Treating Wounds

Properly cleaned and shaped wounds help prevent tree decay.

- Treat wounds by removing dead and torn bark tissue, then scribe and round the edges of the wound with a sharp knife.
- Although wound dressings have no proven healing value, commercial asphalt-based preparations specifically for tree wounds or orange shellac can be applied to wounds as a cosmetic treatment.

Flooding

Tree roots need oxygen to survive. In soils that remain wet for long periods, roots can suffocate and die. Trees with sustained root injury exhibit a progressive decline, early fall coloration, premature leaf drop, small leaf size, twig and branch dieback, and sucker formation on the trunk and large branches.

Excessively wet soil conditions can also favor the activity of fungi that attack roots and cause disease. As a result, changes in normal drainage patterns due to grade alteration may cause local flooding and kill trees.

- Avoid changes in drainage patterns that will cause water to back up or pool over roots for extended periods.
- Whereas some trees tolerate wet locations (See Table I), low areas where drainage is poor and flooding may occur are inadequate sites for most species of trees.
- Similarly, species that thrive in wet locations may not survive if changes in drainage patterns divert water flow away.

Table I. Tolerance of tree species to wet sites and occasional flooding.

Tolerant	Intolerant
ash	American beech
black gum	basswood
cottonwood	black gum
elm	black walnut
pin oak	blue spruce
poplar	chestnut oak
red maple	eastern white pine
river birch	hemlock
silver maple	Norway maple
sweet gum	Norway spruce
sycamore	paper birch
white cedar	redbud
	red cedar
	red oak
	red pine
	sugar maple
	tulip tree
	white birch
	white spruce

Building and Road Construction

Trees, like people, are easily disturbed by changes in their surroundings. It may be several years, however, before obvious symptoms appear. Construction of buildings and roads is a major cause of tree injury and loss.

- Although trunk injury can kill trees, it is root injury during construction that is most likely to kill trees.
- Prevent damage to trees near construction sites by fencing or otherwise protecting them from earthmoving equipment.
- Avoid the placement of excessive soil fills or impervious materials within the drip line (the entire area under the branches) of a tree. It is even better to protect an area several feet wider than the drip line. Since fill materials can cut off oxygen to plant roots, the extent of damage to roots is directly related to depth of material applied and the length of time it is allowed to remain.

- Alternatively, lowering the grade during construction or removing soil can also destroy plant roots.
- Carefully design and construct trenching for cable and water lines to avoid or minimize root damage.

Soil Compaction

Soil compaction around trees is caused by people, animals or pets, bicycles, and cars. Since compaction cuts off water and oxygen to tree roots, trees growing in such soils may decline and die.

- Design pedestrian and other traffic patterns to prevent soil compaction. Soils high in clay are more prone to compaction than are sandier soils.
- Public cooperation and respect for trees are needed.

Lawn and Garden Equipment and Chemicals

Use equipment carefully to prevent serious injury to tree trunks, branches, and roots.

- To prevent injuring trees accidentally with lawn mowers or weed-eaters, grass should be kept away from tree trunks.
- Mulches can be used for a “mower buffer.”
- Choose all pesticides wisely. Use all chemicals *only* in the precise manner described on the label.
- Certain herbicides (weed killers) can kill trees.
- Many herbicides that are safe for grasses are *not* safe to use around trees.
- Recently transplanted trees are especially susceptible to herbicide injury.

- Avoid excessive use of commercial fertilizer-herbicide mixtures near trees.
- Overdoses of fertilizer can kill trees.

De-icing Salt

De-icing compounds used on highways, driveways, and sidewalks in winter contain sodium chloride and/or calcium chloride. These chemicals are toxic to trees. Trees are injured when salt is absorbed by their foliage and roots.

- Avoid or minimize the use of salt around trees.
- Use sand, sawdust, or other insoluble abrasives on icy surfaces.
- When landscaping, place trees and shrubs that are sensitive to salt as far as possible from problem areas (see Table II). Select planting sites that are not subject to salt-contaminated waters, and place shallow diversion ditches between roadways and plantings. When vegetation must be placed near roadways, utilize salt-tolerant plants.

Table II. Salt tolerance of selected tree species.

Moderately Tolerant	Intolerant
big tooth aspen black cherry black locust box elder burr oak callery pear English oak golden willow green ash honey locust horse-chestnut Norway maple quaking aspen red oak Russian olive Siberian crabapple Siberian elm tree-of-heaven weeping willow white oak white poplar	American elm American Linden apple basswood beech box elder boxwood flowering quince ginkgo ironwood hickory hombeam little-leaf linden mimosa red maple shagbark hickory silver maple speckled alder sugar maple sycamore
Austrian pine Colorado blue spruce Japanese black pine mugo pine pitch pine red cedar white spruce	balsam fir Canadian hemlock Douglas-fir Eastern white pine red pine yew