

## SURVIVAL STRATEGIES FOR CITY TREES

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Most decline and death of urban trees occurs as an end result of the activities of people. People's activities that are detrimental to tree health are known as People-Pressure-Diseases (PPDs). PPD often begins at the time of planting but may occur at any point in the tree's life. Much of the tree mortality in cities, therefore, is predictable and preventable.

Tree survival can be greatly increased if the following 4 rules are followed:

**1. Do not disturb the root zone under the branches.** Roots are known to extend outward more than twice (2X) the height of the tree. Most roots, however, occur in the area under the branches. Any disturbance in this zone is likely to be a serious threat to the tree's health. Consider this a red zone. Prevent any disturbance such as change of grade or trenching within it. Outside this zone is a yellow zone which extends outward to 2X the height of the tree. Some root injury will occur from disturbances in the yellow zone but the health effects on the tree will usually be minor. Proceed with caution in this zone.

**2. Maintain moisture balance.** Tree health depends on the proper balance of soil moisture. Too much moisture is just as unhealthy for a tree as too little. A tree needs soil moisture to function but too much water in the soil suffocates the roots. Irrigate trees when needed and *always* provide drainage for soil moisture.

**3. Maintain oxygen in the soil.** Soil oxygen is often the most critical factor in tree survival in the urban environment. Constant diffusion of atmospheric oxygen into the soil is essential for root function and survival. Human foot, animal, and/or vehicular traffic can all cause the soil to compact

to a degree where gas exchange between soil and air is severely inhibited. Organic mulches and many inorganic mulches, when applied properly, provide adequate gas exchange and provide protection against soil compaction. Mulches, however, are not suitable for many high use urban areas. Impervious materials, such as asphalt, concrete, and plastic sheets prevent gas exchange between air and soil. Roots cannot grow beneath them. Even bricks and "porous" concrete blocks provide little gas exchange. Roots can only grow in the spaces between them. The root zone must have air contact. Raised walk surfaces with an air gap below have been the only successful solution to covering the root zone and keeping the root alive.

**4. Plant healthy trees properly.** Many trees are already doomed to poor health and an early death at the time of planting. Inspect trees *before* planting and accept only the most healthy and vigorous trees for urban plantings. Make sure the planting hole is adequate for the size of tree to be planted. Many planting holes are too small. Remove cord ties on the root ball and roll back the wrapping to determine proper depth placement. Remove any nonbiodegradable wrapping. Allow for downward settling of the root ball during depth placement, especially for larger stock where the root ball is quite heavy. Secure the tree with a support system appropriate with the level of human activity around it.

Other things to do to increase tree survival: adjust support systems on newly planted trees periodically and remove the systems as soon as possible; provide trunk protection in high use areas; prune properly; fertilize; mulch properly wherever possible; avoid plastic sheet mulching.

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