



How To Kill a Tree

TREE CITY USA®
BULLETIN

No. **14** Editor: Dr. James R. Fazio • \$3.00

No, the editor has not gone mad, nor has the Arbor Day Foundation reversed its role of promoting good tree care! Instead, we hope we have gained your attention with the bit of reverse psychology in the title and throughout this issue. The urgency to spotlight needless destruction of trees has reached a critical level. Most of the destruction is preventable — if people only realized the effects of their actions.



An analysis of tree cover in 20 American cities found that in 17 of the communities studied, tree cover was declining. The U.S. Forest Service pegged this loss at a rate of about 4 million trees per year. Other studies have verified that street trees are often removed without replacement.

In short, we are losing ground. We are slowly losing our familiar urban greenery and the many benefits that trees provide for our enjoyment, health, and economic well-being.

To reverse the trend, there are two major ways to attack the problem. One is to plant more trees. This has long been the goal of the Arbor Day Foundation. The other way is to prolong the lives of trees that we already have — a major objective of the Tree City USA program and this bulletin. This issue is particularly dedicated to increasing the awareness of what every citizen and municipality can do to keep trees alive and healthy — longer.



Arbor Day Foundation®
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City Life Is Tough for Trees

Instead of the respect they deserve for hundreds of benefits freely provided, trees are too often treated like yesterday's newspaper.

At best, well-meaning homeowners forget that a tree is a fragile system of living tissue. The life of a tree is so tenuous that naturalist Enos Mills marveled that any can even survive. Existence depends wholly on paper-thin leaves, a sheath of microscopic cambium cells protected only by the wooden armor of bark, and a mat of roots absorbing the chemicals of life — or death — within inches of the soil's surface.

Little wonder that trees in the center of cities live an average of only seven years. Chances for survival increase with the distance from the center of town, but even so, American Forests reports that the average for all urban trees is only 32 years of life. This is a far cry from the 150 years or more that the same trees could be expected to live in their native habitat.

The reasons for early mortality are many and most are avoidable. In the pages that follow are some common examples.

Planting ...

Many trees are killed right at the start. Nationwide, about 20 percent of all new street trees die soon after being planted. Some die quickly, usually from someone on the planting crew having allowed the roots to dry out in the sun or wind before

planting. Others, like those in the photos on page 3, reveal the signs of poor planting years later. Experts estimate that if a tree is planted correctly, it will grow twice as fast and live at least twice as long as one that is incorrectly planted.

TO KILL A TREE

- Leave a tree out where the sun and wind will dry out the roots or root ball.
- Do not water the tree after planting.
- Plant the tree in a saucer like depression and a narrow hole, deeper than the original ground line it had in the nursery. Then watch it smother and drown!
- Pack the soil tightly around the roots.

TO SAVE A TREE

- Prepare the site by digging a hole no deeper than the planting ball. To encourage root growth away from the ball, rototill or loosen soil with a shovel several feet around the planting hole.
- Gently remove wires, nylon cord, or plastic from the planting ball. Loosen pot-bound roots and cut any that circle severely.
- Place planting ball in the hole on top of firm soil.
- Plant no deeper than where the root flare (highest main roots) is just below the soil surface — and no deeper.
- Backfill with native soil or spread soil amendments throughout the entire planting area.
- Water the soil to settle it instead of packing.
- Water an area beyond the root ball to encourage root spread.
- Stake loosely only if necessary, but no longer than one year.



ENCIRCLING ROOTS CAN KILL

A spring windstorm knocked over these 12-year-old pines like bowling pins. A look at the base of a trunk shows why. The area where roots and trunk join looks like a beaver gnawed through it. Actually, it is the telltale sign of root girdling caused by poor planting many years earlier. It clearly shows why it is important to open containers, straighten out encircling roots, and avoid watering only the planting hole.

When Trees Are Young ...



TO KILL A TREE



- Let trees and the surrounding soil dry out.



- Stake them tightly, leave wires until the tree grows over them, or let vines grow on them so that the tree may be strangled or its leaves deprived of light.



- Overfertilize your tree. This can "burn" roots or overstimulate crown growth, making it harder for the tree to survive drought.



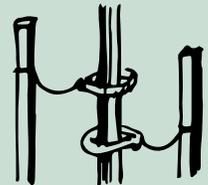
- Keep the soil around the tree compacted to restrict passage of oxygen and water to the roots.



TO SAVE A TREE

- In dry spells, water the entire area within and a little beyond the drip line. Water about once a week, enough to have the soil damp to a depth of 1 to 3 feet.

- Except for transplanted conifers and trees on very windy sites, staking is usually not necessary. If you must stake young trees, allow room for normal sway in the wind. This aids root development and strengthens the trunk. Cover wires with rubber or plastic to protect bark, and remove all wires after one year.



- Keep vines away from your tree. Cut existing vines into sections and carefully peel them from the tree's bark.
- Keep soil pores open with mulching around individual trees or by planting groups of trees in flower and groundcover beds.
- Fertilizing is usually unnecessary. Seek professional advice and you'll save money — and perhaps your tree.

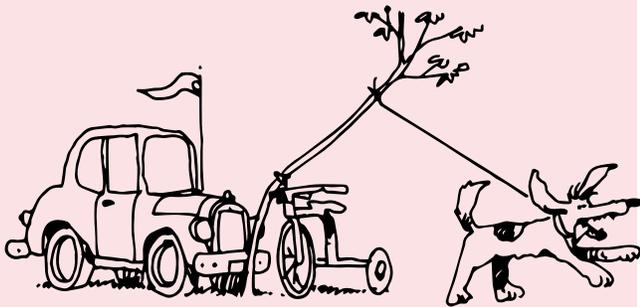
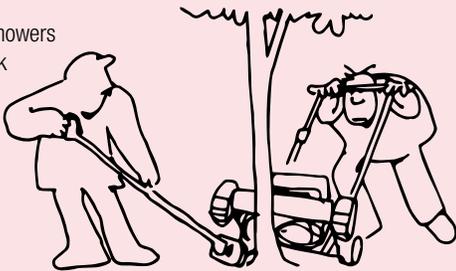


When Trees Are Young ... (continued)



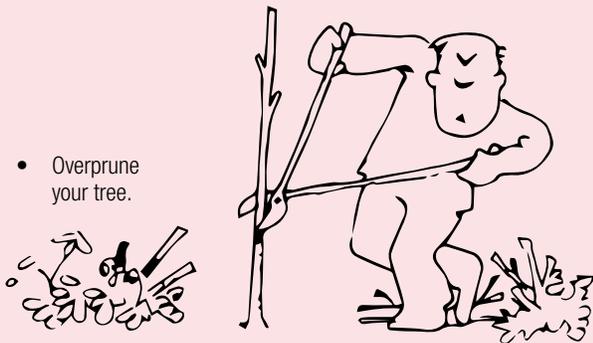
TO KILL A TREE

- Bang lawnmowers into the bark or cut it with weed trimmers.



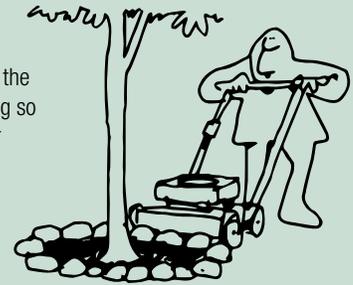
- Let cars park close to the tree so bumpers can damage the bark. Other possibilities include chaining bicycles or dogs to your tree.

- Overprune your tree.

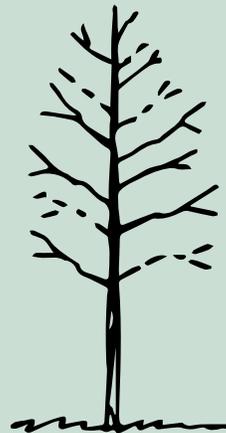


TO SAVE A TREE

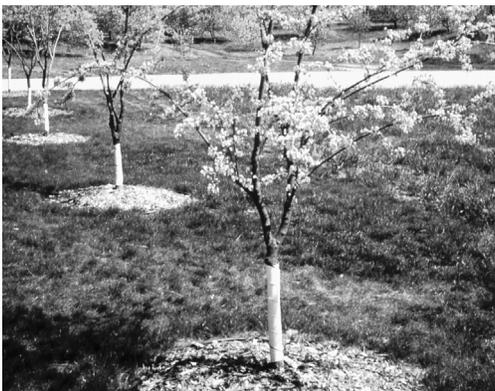
- Keep grass away from the tree by proper mulching so lawnmower or trimmer damage is less likely.



- Use barriers to keep cars away from the tree. Don't use your tree as a hitching post.



- Remove no more than one-fourth of the live crown of the tree in a single year. Be sure to retain a single, central leader. See *Tree City USA Bulletin No. 1* for more information.



MULCHING HELPS A TREE IN MANY WAYS

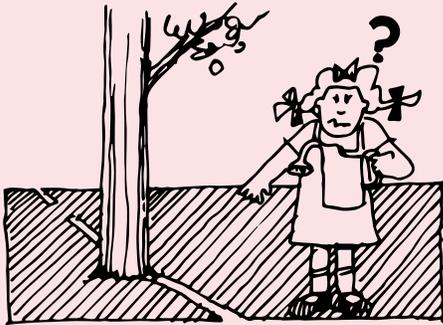
Mulching — the placing of bark, wood chips, decorative gravel, or other materials on the soil around the tree — can greatly enhance the tree's health if not piled too deeply (approximately 2 inches depth is recommended). Also, allow a gap between the tree trunk and the mulch. Mulching helps retain moisture, control weeds and grass, reduce erosion, improve appearance, prevent soil compaction, keep lawnmowers away, and simplify maintenance. Organic mulches can improve soil structure as they decompose.

See *Tree City USA Bulletin No. 5* for additional information about mulching and working with soils.

Trees of Any Age



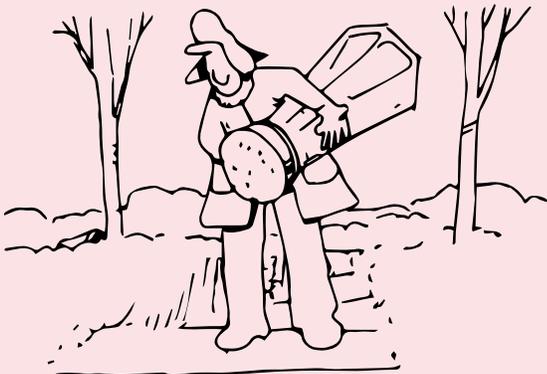
TO KILL A TREE



- Cover or pave the area above tree roots, or cut them when making changes in grade.



- Top, chop, or mutilate your tree.
- Ignore storm damage to limbs.
- Hire a fly-by-night tree company.



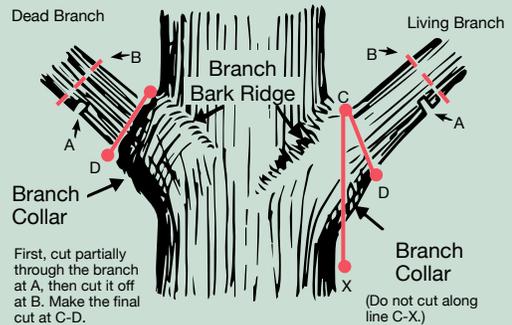
- Use chemicals to kill weeds over root zones. Use liberal amounts of salt on sidewalks near trees.



TO SAVE A TREE



- Maintain the original ground level around trees. If paving is necessary, use material that lets air and water through.



- Use proper techniques for removing large limbs when they become damaged or must be removed for other reasons. Avoid topping. See *Tree City USA Bulletin No. 8* for information on how to control size without topping. See *Tree City USA Bulletin No. 6, How to Hire an Arborist*.



- Avoid using herbicides or weed-killing lawn fertilizers in the root zone, which may be an area with a diameter up to two times the height of the tree. When chemical herbicides are absolutely necessary, use only safe chemicals and follow label directions carefully. Use sand, gravel, or safe, non-chloride products for icy walks near root zones.

Construction Can Be Deadly to Trees

In communities everywhere, growth and expansion are underway. Unfortunately, in the wake of prosperity and pursuit of the American dream, we are killing trees. In many areas of the country, under the guise of efficiency, trees of all ages are bulldozed into oblivion to make way for housing tracts, roads, and shopping malls.

People are beginning to recognize the foolishness and false economy of this needless, counter-productive destruction. Trees and quality development go together. Already some

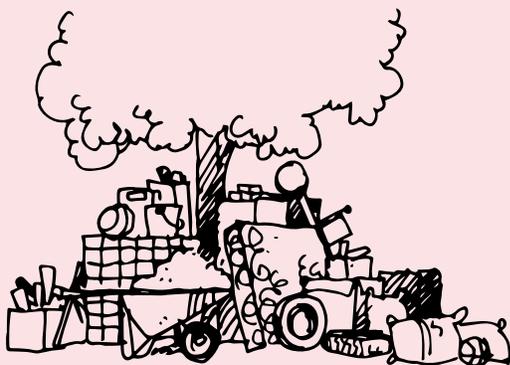
enlightened communities have ordinances that protect existing trees during construction. There are developers, too, who wisely see the entrepreneurial advantage in saving trees during construction.

Here is a sampling of how trees are commonly killed during construction and some simple techniques that any property owner or developer can use to save them instead. Some of these methods are explained in more detail in Bulletin No. 7.

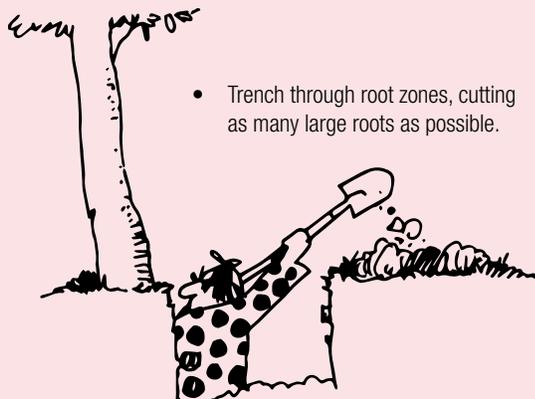


TO KILL A TREE

- Turn the bulldozer loose as the first step in construction.



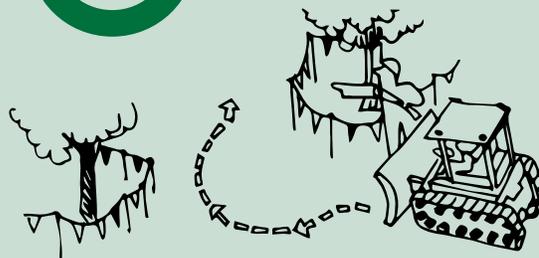
- Run equipment, store materials, and work beneath the ol' oak tree.



- Trench through root zones, cutting as many large roots as possible.



TO SAVE A TREE



- Plan building locations carefully, and clearly communicate your desire to save desirable existing trees.
- Transplant small trees to empty sites on your property or donate them to others.



- Keep construction equipment, wastes, and activity away from trees by fencing off the area beneath and around trees that are to be saved. Make sure contractors understand and honor these barriers.



- Avoid severing roots by trenching around the drip line of the tree or tunneling beneath roots if necessary.

Tree Mortality and the Community Forestry Program

Few people know more about tree death than the arborists and urban foresters who care for our nation's street and park trees. To get an overview of the worst causes of premature tree mortality other than insect or disease epidemics, 10 professionals representing all regions of the country were asked to rank the top 10 killers. Here are the results:

No. 1 Killer: *Construction Damage*

Every respondent mentioned this preventable cause of tree deaths and rated it strongly into the No. 1 position of infamy. It is clear that a priority challenge for urban forestry programs is public education stressing the value of saving existing trees during development projects of all kinds.

No. 2 Killer: *Improper Pruning*

If ever there was a gap between what is known in the technical sense and what is actually practiced, pruning is the prime example. Despite the research and educational efforts that have been done on this subject, respondents named poor pruning practices as the second greatest danger to urban trees. Specifically cited were topping, other excessive pruning (too much of the live crown removed at one time) and the kind of “flush cutting” that Shigo and others have shown to break down a tree's natural defenses against the invasion of decay organisms.

No. 3 Killer: *Vandalism*

This is one of the most difficult problems to prevent. In most cases vandalism is probably caused by an expression of anger or frustration unrelated to trees. Ways to prevent vandalism include planting larger trees (minimum of 2-inch caliper), pruning lower limbs to at least 8 feet above sidewalks as the tree grows, using trees with thorns, and involving residents in the selection, planting, and care of street trees.

No. 4 Killer: *The Wrong Tree for the Site*

Poor species selection dooms many trees right from the start. Disease resistance and suitability to soil and climate conditions were mentioned as the factors most often overlooked. Planting large tree species beneath utility lines was also frequently mentioned as asking for trouble. The involvement of qualified foresters and arborists in the planning stage of all planting projects could easily eliminate this unnecessary cause of tree mortality.

No. 5 Killer: *Lack of Watering*

A systematic means of watering during dry spells — especially newly planted trees — is one of the essentials of a well-managed urban forestry program. Enlisting the aid of local residents is one way to do this if equipment and paid personnel or contractors are not available to do the job.



Proper planting is essential for tree health.

No. 6 Killer: *Poor Planting*

Proper planting is essential. It requires special training for crews and close supervision. Planting too deeply was the problem mentioned by several of our respondents. Other problems typically include rough handling of new trees, allowing roots to dry, not removing the root containers or bindings, and planting root-bound trees without cutting or straightening encircling roots.

No. 7 Killer: *Soil Compaction*

Soil compaction is one of the slower and more insidious causes of tree mortality. Mulching and regular aeration are good ways to minimize the damage.

No. 8 Killer: *Bark Damage*

Lawnmowers and string trimmers are the main culprits here — or, more accurately, the people who operate them carelessly. Proper instruction and supervision are key solutions, with mulch helping even more.

No. 9 Killer: *Misuse of Herbicides*

Herbicides, especially those containing chemicals that work through reactions in the soil, should be kept away from the root zones of trees. Weed treatments on windy days should also be avoided and weed or lawn crews should be given special instruction about tree roots and how to avoid damaging them. Always read and follow label directions carefully.

No. 10 Killer: *Automobiles*

Not surprisingly, bark damage and the breakage of young trees caused by cars is a common occurrence in urban areas. Traffic barriers, proper curbs, and planting out of the reach of bumper and tailgate overhang can help reduce this damage.

Tree City USA Bulletin is Designed to Help You Help

The bottom line for producing Tree City USA Bulletin is to help promote better tree care. This is done by providing current how-to information and a section that highlights urban forestry programs. This two-prong approach is intended to make the Bulletin useful to individual home or business owners with one or any number of trees under their care and to encourage elected officials, tree boards, and other community leaders to make urban forestry a strong component of local government. In both ways, the Bulletin can also help tree care professionals such as city foresters, arborists, extension foresters, and others who face the challenge of educating the public about trees and developing political support.

To help stop the killing of trees and to help educate others about tree care and the need for a strong urban forestry program, why not plan to distribute the Bulletin at public meetings and workshops, through display on literature racks, and in response to inquiries about trees?

To order more copies of the Bulletin or for information about other helpful programs of the Arbor Day Foundation, please visit our website at arborday.org.



Leaving strings of Christmas or other decorative lights in a tree is a sure way to eventually cut off the tree's ability to transport nutrients through its phloem tissue. When lights are used, they should be strung loosely around the limbs and trunk and either removed or checked annually.

FOR MORE INFORMATION ...

For more information and references, please visit arborday.org/bulletins. Explore the Foundation's website for other helpful pages on trees, sale items, the Tree City USA program, public education, the management of community forests, and much more.

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Arbor Day Foundation in cooperation with the U.S. Forest Service and National Association of State Foresters. To achieve the national recognition of being named as a Tree City USA, a town or city must meet four standards:

- Standard 1: A tree board or department
- Standard 2: A tree care ordinance
- Standard 3: A community forestry program with an annual budget of at least \$2 per capita
- Standard 4: An Arbor Day observance and proclamation

Each recognized community receives a Tree City USA flag, plaque, and community entrance signs. Towns and cities of every size can qualify. Tree City USA application forms are available from your state forester, the Arbor Day Foundation at arborday.org/treecity, or your state forestry agency.

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