

Plan Before You Grade

In terms of aesthetics and property value, shade trees are one of a new home's most important assets. So it's disturbing to see a beautiful tree begin to die soon after you move in. In most cases, the problem has nothing to do with you—it started when your homesite was being graded.

To understand how even slight grading can harm a tree, you must understand a little bit about a tree's root system. A tree uses tiny, hairlike feeder roots to gather nutrients and water. These roots are usually found in the top 18 inches of soil and often extend well beyond the tree's dripline. Their health depends on a delicate balance of soil moisture, microorganisms, and oxygen. Disturb any one of these elements and the whole system is thrown out of whack. Young trees can sometimes adapt to these changes, but older trees cannot.

One of the most harmful results of grading work is soil compaction. This occurs when heavy vehicles, such as bulldozers and dump trucks, are driven over tree roots or parked under trees. The extreme weight crushes the soil, squeezing out pore spaces and preventing penetration of water and air. Over time, this can cause a tree to decline.

Obviously, if your homesite has been graded for some time, there is little you can do. But if you have just bought a house, there are some precautions to take.

If the site is freshly graded, there may still be time to unearth the covered roots, and then take steps (described here) to preserve the tree's health. And if construction hasn't begun, it's a good idea to visit the site and pick out any tree you want to save. Mark it clearly; then place stakes around its dripline. Connect the stakes with fluorescent surveyor's tape, and let the contractor know that no vehicles are allowed inside the marked area.

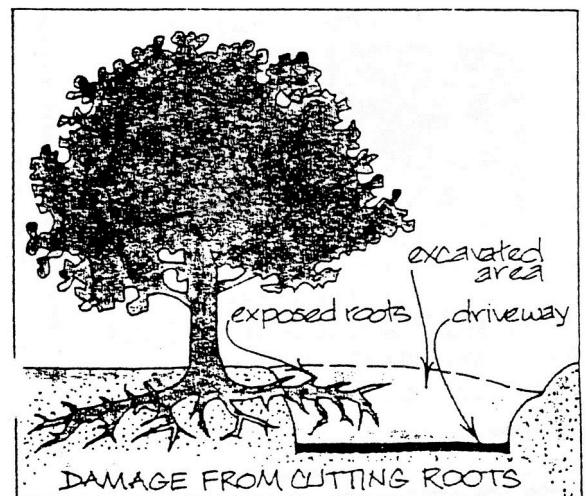
Bob Ray, a consulting arborist in Louisville, Kentucky, says that heavy vehicles should not be parked anywhere on heavily wooded lots. Furthermore, the future parking area and driveway are the only areas where vehicles should be driven or building materials delivered to and stored.

Don't Cut the Roots

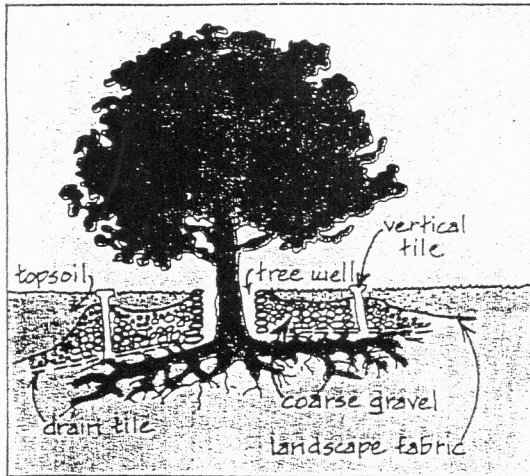
The cutting of roots during excavation is another slow killer of trees. This most often occurs when soil is removed for roads and driveways. Many times, all the major roots on one side of a tree are severed. If the tree is young, numerous branches may die while it slowly adjusts - mature trees usually die.

Cutting the roots of a large tree may also weaken its hold on the earth and make it prone to falling in windstorms.

If you must excavate close to a tree try to keep the cut at least 15 feet away from the trunk. Remove the injured ends of mutilated roots and quickly cover exposed roots with moist soil. If it is absolutely necessary to make the cut closer than 15 feet, you probably should remove the tree; then plant a new one when grading is completed. This will save the expense of having to cut the tree down when it dies a year or two after excavation.



Cutting major roots to put in a driveway can seriously harm a tree. It also weakens the tree's hold on the earth.



When the grade is to be raised by 1 foot or more, building a tree well and aeration field is the only way to save an existing tree.

Too Much Soil Is Deadly

Most of us don't consider soil to be dangerous to trees, but excess soil spread over tree roots is deadly. This happens when lots are leveled and the grade is raised around existing trees. These signs of soil-fill damage soon appear: small, yellow leaves; numerous suckers along the trunk and major branches; many dead twigs; and large, dying branches.

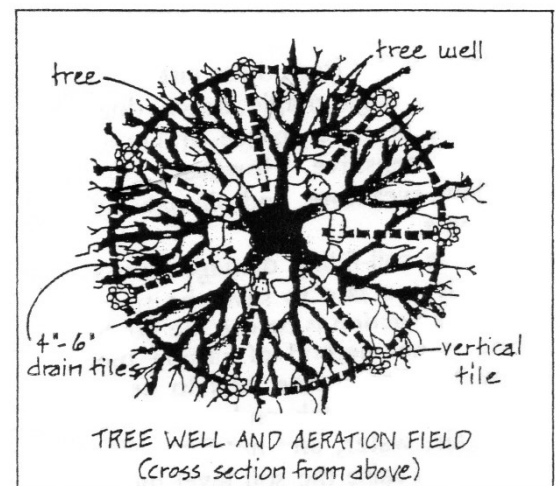
This damage has several causes. First, piling soil over existing roots disturbs the operation of soil microorganisms, which break down organic matter into food for the trees. Second, atmospheric oxygen can no longer get to the roots. Third, toxic gases and chemicals, which may build up in the soil near the roots, can no longer escape into the air. Finally, the water table may be raised, which will waterlog the roots.

Not all trees suffer from these effects to the same degree. Sugar maple, beech, dog-wood, tulip poplar, pine, spruce, and most oaks are very sensitive. However, elm, poplar, willow, sycamore, and pin oak are more adaptable.

Once serious soil-filling damage shows up, it's usually too late to save the tree. The time to take action is before the grading is done. One method of raising the grade is by building a tree well to keep soil away from the trunk and allow the roots to get air, water, and nutrients.

If you have to raise the soil level more than 1 foot around the tree, you'll also need to lay an aeration field of 4- to 6-inch tiles in a spoke-and-wheel pattern around the tree out to the dripline (see sketches). Lay the tiles on the original grade so that they slope away from the trunk (to keep water from flooding the tree). Next, lay a circle of tiles that connects the radial spokes. At the junction of the spokes and circle, place vertical tiles that will extend to just above the new grade. Fill in over the horizontal tiles with 6 to 12 inches of coarse gravel. Then lay a sheet of landscaping fabric over the gravel. Finally, spread 12 inches or more of good topsoil over the fabric, and smooth the soil until it conforms to the new grade.

Building a tree well and aeration field is not only a lot of trouble, it can be expensive. So before you decide to save a tree in an area to be graded, determine whether it is worth saving. Ask these questions: Is the tree healthy and vigorous? Is it a short-lived type (black locust, poplar, mimosa)? Is it weak wooded or weedy? Does it produce litter? Are there other trees nearby that serve the same purpose? You may decide that saving an old tree isn't worth the bother and expense needed to maintain it. Cutting it down and planting a new, more desirable tree may be wiser.



TREE WELL AND AERATION FIELD
(cross section from above)

For more information, contact the American Society of Consulting Arborists (Box 6524, Clearwater, Florida 33518), and ask them to recommend an arborist in your area.