



## TREE SURFACE ROOTS

Tree roots are essential for the growth and health of trees. However, when tree roots surface, they can cause problems. Walking and mowing in the area are difficult; and sidewalks, patios and foundations may be damaged.

Root systems are affected by the soil environment. Surface roots are more likely to appear in areas around rivers, streams and wetlands where roots grow close to the surface to avoid saturated or wet soil. Heavy traffic in areas where a tree is trying to grow can cause the soil to be compacted and make root growth more difficult.

Nonetheless, any tree, given sufficient time, will produce surface roots. Most tree roots are only 12 to 18 inches below the soil and as they grow in diameter, they break the surface. Faster growing trees, such as silver maples, sycamores, elms, and willow will produce surface roots faster. Conifers such as spruce and Douglas fir are also known to produce earlier surface roots.

There are several solutions to problem surface roots. You will need to identify your individual priorities.

While root pruning is often the first action people take in this situation, this should only be used if a structure such as a walk or foundation is in danger. Be aware that **permanent damage to the tree will result** from this action. This damage could interfere with the tree's stability, or its ability to absorb water and nutrients from the soil.

If root pruning is necessary, follow these guidelines: **do not remove more than twenty-five percent** of the functioning roots under the tree canopy and root prune in the cool weather of late winter or early spring when there is less danger of dehydration. **Do not root prune after trees break bud in the spring**, as this will deprive the tree of water when it needs it the most. Consider extending your pruning project over several years to give the tree an opportunity to regrow supporting roots elsewhere as you gradually remove roots.

Removing roots close to the main trunk may create a structural hazard, weakening not only the tree's health, but also its ability to withstand windstorms and the weight of snow. This area is called the Critical Root Zone, and if cutting roots in this area must be done, it should only be done in consultation with a Certified Arborist. The Critical Root Zone is based on the size of the tree. It is determined by measuring the trunk diameter at 4.5 feet above the soil line. You can also measure the circumference at this height, and divide your measurement by 3 to get the approximate diameter. Take this number

Visit our website at <https://extension.wsu.edu/spokane/master-gardener-program/home-lawn-and-garden/>  
e-mail your garden questions to: [mastergardener@spokanecounty.org](mailto:mastergardener@spokanecounty.org)

## C137 – Tree Surface Roots

and multiply by 1.0 for healthy trees or younger trees. Multiply by 1.5 for mature trees or stressed, unhealthy trees. The result is the number of feet out from the trunk in all directions, where no roots should be cut. For example a tree with a six inch diameter (as measured four and a half feet above the soil line) would have a Critical Root Zone of six to nine feet in all directions from the trunk. Six feet for young trees and healthy trees. Nine feet for mature or unhealthy trees.

Another solution, rather than cutting roots, is to add mulch to the area. Mulching eliminates the need to mow and walk in the area and provides a clean and attractive look. Two to four inches of mulch should cover the roots without burying the tree too deeply. Use a material that allows some air circulation, like coarse bark or pine needles. To protect against trunk fungi and insect infestations, keep the mulch at least six inches away from the trunk itself. For a better result, extend the mulch ring out to the dripline or at least to where the roots have prevented healthy turf growth.

A third solution would be planting a ground cover like Shuttleworth's wild ginger (*Asarum shuttleworthii*, Zones 6-9), Dwarf Solomon's seal (*Polygonatum humile*, Zones 5-8) or Bunchberry (*Cornus canadensis*, Zones 2-7) to cover the exposed roots. Work at least two inches of compost or topsoil into the area before planting. Avoid the temptation to turn your ground cover into a garden where digging and walking in the area could cause damage to your tree's roots.

Choosing the right tree can delay the appearance of surface roots. Good choices are oak, ginkgo, ash and linden. Poor choices include maple, sycamore, spruce, beech and some elms. Infrequent, deep waterings will also help the growth of roots further below the ground. Frequent, shallow waterings support the growth of roots closer to the surface.

## Sources

The Tree Underground, Extension.iastate.edu

Dealing With Exposed Tree Roots, counties.agrilife.org

Surface Root Syndrome, Extension.purdue.edu

Root Pruning Guidelines, Landscape Plants, University of Florida,  
<https://hort.ifas.ufl.edu/woody/root-prune-guidelines.shtml>