



Where Are My Trees' Roots?

One of the most frequently asked questions of community arborists is, "Will it hurt my tree if I cut the roots?" Indeed, tree roots are mostly ignored until they cause a problem by "popping up" in the yard, cracking a driveway, or tilting a sidewalk. Many people think removing a few of the tree's encroaching roots will cause little long term harm and that large trees can easily recover from minor root loss, but that is seldom the case.

How much damage a tree's root system can bear is a function of how much soil surface the roots occupy. The term "drip line," which is often used to describe the limits of root length, is a poor indicator of roots' true extent. Different species also have different types of root systems. However, most trees fall in line with the formulas below, which can be used to calculate the average length of a tree's roots. But first a couple of definitions:

Total root zone area: Area within the soil profile where roots exist; typically the root zone of trees extends beyond the drip line.

Critical root zone: Soil area around a tree containing the roots, which provide stability and a significant uptake of moisture. In clay soils most of these roots lie in the top 12-14" of the soil. Damaging roots in this area can cause significant tree dieback or death.

Total tree root zone radius = diameter of tree measured at 4.5' above the ground (dbh) x 1.5 feet.
12" dbh tree = 12" X 1.5' or 18' root zone **radius** around the tree.

Critical root zone radius = diameter of tree measured at 4.5' above the ground (dbh) x 1.3 feet
12" dbh tree = 12" X 1.3' or 15.6' critical root zone **radius** around the tree.

When calculating your tree root zones, remember that foundations, driveways, sidewalks, and walls can limit the effective areas that roots can occupy. Utility line replacement also frequently results in roots being cut or disturbed. Cutting or damaging more than 30% of the critical root zone area can cause dieback or death and may destabilize the tree. If you are unsure about the damage you may cause, contact a certified arborist for advice.

