

the total weight of the tree. If you don't believe the power of a sinker root, find a tree that has blown over and try to pull even a one- to two-inch sinker root out of the ground. It will put up a surprising fight.

The Root of the Matter

It soon discovered that in a good soil, a tree's roots will often grow to occupy an underground area wider than its dripline. If led by available moisture and nutrition, a tree may tunnel its roots through soil space ranging from an area one-half wider than the dripline to as much as three times further. In special cases, tree roots may ramify much more than anyone would imagine [See Figure #47.] If you add a subsoil barrier such as rock, bedrock, or caliche (hardpan), a tree's roots will wander even further beyond the canopy area in search of food. A deep sandy soil offers little resistance to growing roots and allows for root exploration of three or more times the width of the tree. And, like a gardener struggling to dig

heavy clay soil, roots don't like clay either and don't make much headway through it, perhaps only one-half the width of the dripline. In Figure #48, you'll notice that the canopy of this walnut tree measures about ten to fifteen feet in diameter, yet its primarily shallow roots (most of its lateral roots grow in the top one to two feet of the soil) extended for fifty-one feet before the researchers finally gave up—and the root still measured one-half inch in diameter. (Those fainthearts obviously never met Professor Weaver!)

Some more examples include:

- Poplar (*Populus generosa*) can ramify 77% of its roots beyond the dripline.
- Another study found that 35% of poplar trees grew roots greater than two times the distance from the trunk to the edge of the foliage.
- Colorado blue spruce (*Picea pungens* 'Glauca') grow 60% of their feeding roots

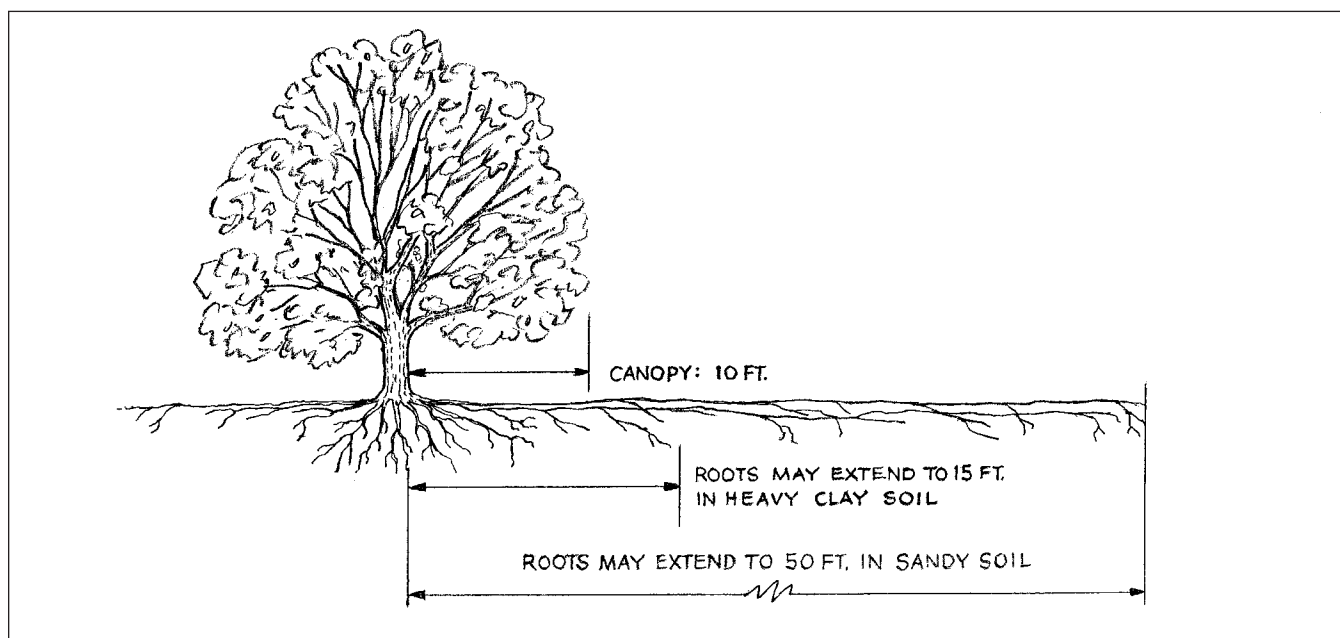


Figure #47: Trees' roots commonly grow one-half wider than the dripline (canopy), and occasionally to as much as three to five times further.