

Healthy Roots

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It is important to understand how to keep your trees healthy. In order to keep your trees healthy and disease resistant, we need to begin at the bottom first: Roots.

Healthy roots are the first element to a healthy, disease resistant tree. Roots are a tree's lifeline, performing many vital functions: They anchor the tree, absorb water, and wrest vital nutrients from the soil.

Tree root systems consist of larger transport and support roots, and smaller absorbing roots. Contrary to popular belief, tree roots do not "seek out" water with a large taproot (a large taproot only persists in very few species of trees, most of which are not planted in home landscapes). Absorbing roots, or feeder roots, are soft and non-woody and are necessary for extracting water and essential nutrients from the soil. Although they are much smaller than the large transport roots, they constitute the majority of the root system's surface area. The large woody transport roots keep the tree from falling over, and transport water from the absorbing roots to the tree. The large woody transport roots also store water, and store sugar starches (tree food) produced by the leaves. About 85% of a tree's roots are within the top 18 inches of the soil and usually do not reach a depth of more than 3 to 7 feet. They spread to where soil conditions provide essential elements such as oxygen and moisture. Roots grow from their tips, and can potentially extend from the trunk *two to three times the height of the tree!*

Figure 1: Area of Root Distribution vs. Crown Distribution

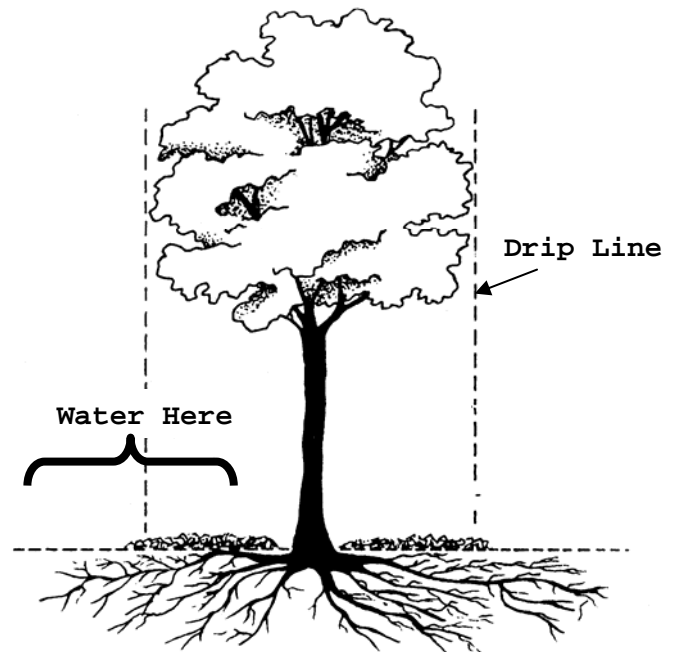
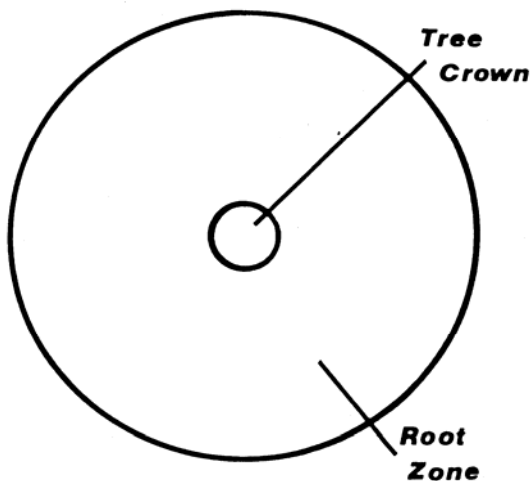


Figure 2: Where to Water

Protection of the root system is very important. The following tips will help protect your trees' root systems:

During planting, be sure to remove containers (plastic or otherwise), and wrapping (i.e. burlap, wire, string). However, this must be done without breaking the soil loose from the roots or breaking the roots. If containers are not removed, they will restrict root growth, causing decline of the tree and premature death. When digging a hole for planting a new tree make the hole

wide, as much as three to five times the diameter of the root ball, but only as deep as the root ball.

During yard improvements, be aware that tree roots can exist all around your yard, and even into your neighbor's yard (refer to figure 1). Excavating soil can potentially remove or damage the large transport roots and the smaller water absorbing roots. Adding another layer of soil or installing asphalt, cement, brick, or plastic around new or existing trees inhibits oxygen and water availability to the roots.

Avoid compaction of the soil from the trunk out to the drip line (refer to figure 2).

Be very careful when choosing weed control chemicals. Weed control chemicals often target broad-leaf plants, such as dandelions: Trees are a large broad-leaf plant. Read labels carefully, and understand that your trees can be severely damaged by some chemicals.

One last tip is to try and avoid running over large roots with the lawnmower: this can cause decay problems and weaken your tree.

For more information visit www.ext.colostate.edu or call the Colorado State Forest Service at 719.384.9087.