Slug: Ask the Master Gardener
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When construction occurs around big trees, roots are subjected to major disruption, which can cause these trees to become hazardous. It is necessary to imagine what the root structure looks like underground in order to understand the effect of construction on big tree health. A common misconception is that the large top of the tree is balanced with a similar underground root mass, with roots descending dozens of feet into the ground. This is simply not the case! If you observe the roots of a wind blown Douglas fir, then you have seen the pancake- like root wad they produce. Even on big trees, roots are essentially shallow.

Most feeder roots are located near the outer edges of tree root systems and usually extend well beyond the trees` drip line. Those then take up nutrients and usually lie within two feet of the surface. The bigger, anchoring roots, located closer to the trunk, typically extend down another 2-3 feet.

Trenching for water or utility lines, soil compaction by heavy equipment or changing the grade for landscaping can damage or cut roots. Bulldozing, rearranging or adding soil over a large area on grading can change natural drainage systems. The resulting saturated ground or standing water can also weaken or kill trees. Excess soil piled over tree roots reduce the oxygen available to those roots and often causes tree death.

The problems caused by construction may not become evident for months or even years after the damage occurs. It may take 5-10 years for a very large to succumb to the situation. For example tree vigor may decrease over 2 years or more, if over 30-40% of the root system is affected.

Damaged trees also attract insects that tunnel through the cambium layer. This layer, just below the bark, carries the tree's vascular system and must be healthy to provide the exchange of nutrients and minerals between the leaves (or needles) and the roots. Most of the insects that invade ailing trees are bark beetles. Eventually, they may overwhelm the tree's remaining natural defenses and contribute to its demise. Bark beetles generally go after trees that are destined for decline and death and are sometimes referred to as "nature's undertakers".

Damage to tree roots from landscaping or construction can be avoided or reduced by:

- Staying away from a root system, if possible.
- Tunneling under key roots to install underground lines, rather than severing them.
- Temporarily covering roots with several inches of wood shavings or other mulch to insulate them from compaction by heavy equipment (works only if equipment doesn't continually run across root.

Land clearing or logging will also change the environment in which a tree has grown for many years and can result in hazardous situations. For example, a tree that has grown in shade will be exposed to sun when surrounding trees are removed. Freezing temperatures in winter or sunscald during the summer can cause peeling or cracking of the bark. These wounds can serve as entry points for decay organisms. Root system disturbance can weaken trees remaining as buffers, along the edges of logged areas, again attracting bark beetles and other enemies. A tree's ability to withstand heavy gusts of wind, especially during saturated ground conditions, can be compromised by loss of protection from neighboring trees. Where root rot is affecting trees, this can be a serious problem. Weakened trees, once protected when a stand was intact, are suddenly subjected to winds that could topple them. If tree problems occur following a logging operation, hazard evaluations should be considered if remaining trees have potential to damage house or outbuildings.

In anticipation of the fact that we may be subject to some wind this winter, consider inspecting the tree around your home. If any of the conditions mentioned are present, certified professionals are available to help evaluate the safety and health of your trees. Getting qualified help during or after a storm is often difficult so it's better to plan ahead. A list of certified arborists can be found online at http://www.pnwisa.org/catclist.html.

This column is written by Washington State University/Skagit County certified Master Gardeners. Questions may be submitted to WSU/Skagit County Cooperative Extension, 306 S. First Street, Mount Vernon, WA 98273-3805.