

Tree Risk Assessment:

Root and soil inspection

Everyday trees - even healthy-looking ones - become problems when their roots are compromised. Know what to look for to avoid the hazard!

What should a root and soil inspection consist of? First you need to see the buttress roots – the major roots that support the tree. Virtually every hardwood tree species will have buttress roots.

What if you don't see a root flare? A buried root collar is a major indicator of a weakened tree. Trees might put out adventitious roots to compensate, but those roots rarely compensate for the holding ability of the buttress root system.

Next, look at the site to see if there is any evidence of recent cutting of roots or missing roots. If you can, ask the client about site history. If a root was cut years ago, there won't be any sign of the trench, but there may be root decay. Look for missing roots and root cuts.

Root cuts occur in the urban environment fairly frequently. Cuts outside the drip line have virtually no impact on the tree. A one-sided root cut – that is, cutting roots on just one side of the tree – should not have major impact as long as it is five times the DBH away. At that distance, the cutting damages more lateral roots than buttress roots. With lateral roots, the tree can close wounds and regenerate.

If the cut is closer than three-times the trunk diameter distance, there a much higher risk of failure, especially on a tree with a freshly cut root system.



Root crown excavation can be used to detect root rot on suspect trees.

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The Old World woodwasp *Sirex noctilio* Fabricius

Image by William M. Ciesla, Forest Health Management International, www.forestryimages.org

Lately it seems like North American trees have been threatened with one invasive species of insect after another. First it was the Asian longhorned beetle showing up in parts of New York and New Jersey, then the emerald ash borer in Michigan.

The latest imported insect pest is the Old World woodwasp, *Sirex noctilio* Fabricius, discovered by a Cornell University Entomologist in screening traps northwest of Albany, NY last September.

The woodwasp, native to Europe, Asia and northern Africa, favors stressed pines as hosts, but is also

capable of killing other conifers. It has killed up to 80 percent of the pines in certain areas of New Zealand, Australia, South America and South Africa where it has been accidentally introduced.

The wasp is about an inch long and has a broad waist and distinct antennae. It kills trees by introducing a toxic mucus and toxic fungus when the female oviposits her eggs through the tree's bark into the sapwood.

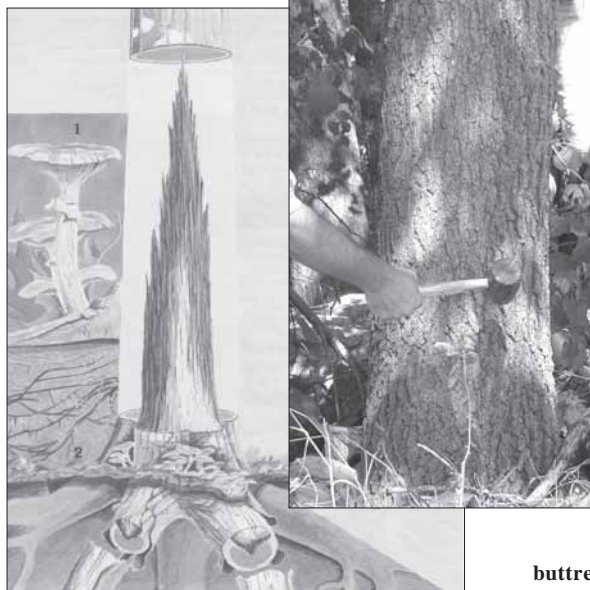
Biological control using a parasitic nematode has been effective in controlling the pest in other countries in the Southern Hemisphere where it has been introduced.

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between buttress roots or in a radiating pattern away from the tree are positive indicators of decay. However, this sign of root rot might not be obvious. Fruiting structures are generally short-lived and later on in the season could disappear.

Trees fail at the base in two ways. One is truly a root failure, which is when the root system breaks. From a climber's perspective, it is the most serious condition. With root failure, the root system is decayed and that decay works into the trunk. The trunk can break due to root decay.

The other situation is really better thought of as soil failure. Soil



failures are most often caused by water-saturated soils. They are associated with heavy storms and are very hard to predict.

Look for cracks or heaving in the soil. This could indicate that the tree is moving dangerously.

Root loss or damage in buttress roots almost always leads to root & butt decay (l.). Sounding with a rubber mallet (r.) can often be used to determine the presence of decay, but it cannot tell you the extent of the decay.