Sherdec Tree Service LLC

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Girdling Roots

Indications and Treatment

What are Girdling Roots?

Girdling roots are roots that grow around or across the trunk or other roots. Girdling roots act like a tourniquet, restricting and eventually cutting off the flow of water and nutrients to other areas within the tree. They are common on trees planted in urban areas. Although the symptoms of girdling roots show up as the tree is maturing, the problem generally starts when the tree is young.

Two types of girdling roots can cause damage. A strapping root crosses over one side of the trunk or root system restricting growth on that side of the tree. A circling root wraps around the trunk.

Research has found a relationship between trees that have a root flare below the surface of the soil and problems with girdling roots. The root flare is the area of the tree where the roots meet the trunk. In natural settings this area is at the soil surface. Girdling roots are common in trees that are planted too deeply or that settled too deep into the soil after planting. Girdling roots may start when the tree is grown in a container. If circling roots are not spread apart or cut at the time of planting, they continue to grow in a circular fashion, squeezing the trunk and/or other roots as they grow. Girdling roots can also result from squeezing roots into a small, compacted planting hole. ***For more information about proper planting see Sherdec's "Tree and Shrub Planting" fact sheet.***

Possible Indications of Girdling Roots

No visible root flare at the soil surface (the trunk looks like a telephone pole going into the soil) See Photo 2.

The trunk may appear pinched at the soil surface. See Photo 3.

- Thin or sparse leaf canopy
- Die-back at the top of the tree
- Leaves may be off-colored or slightly chlorotic (yellow)
- Leaves are smaller than normal
- Early fall color and leaf drop
- Trunk is flattened on one side
- Sun scald or frost cracks
- Wilting or scorching of the leaves

Photo 1: *Girdling roots excavated at the base of a tree. The strapping root in the front has already caused some restriction in the trunk. Notice the circling roots in the background that will eventually girdle the entire stem as the tree grows.*

Which Trees are Worth Saving?

The younger the tree, the more success you can expect with the removal of girdling roots. Girdling roots on a young tree should be cut. As the tree gets larger, removal of the girdling root must be weighed against the injury caused by the root removal. If the tree is large, severing large roots may cause further tree decline and put the tree's survival at risk. ***A Sherdec Arborist can evaluate your tree and estimate whether it is a good candidate for girdling root removal.*** For trees that are high-value and high-risk, it is important to weigh the costs and benefits of the expense and effort. Sometimes removal and re-planting is the best option.

The first step in establishing if girdling roots are a concern for the current and future health of the tree is to excavate the root flare to check for its depth and to expose any girdling roots. The technician in the photo uses an air spade to expose the base of the tree with little to no damage to the tree. (Some trunk and root damage is unavoidable when using a shovel or trowel.)

Next a Sherdec Arborist Technician will assess the severity of the problem root(s). The overall condition and size of the tree as well as the severity and extent of the compression caused by the girdling roots are considered when recommending to try to treat the tree or not. Generally if more than one-third to one-half of the circumference of the trunk is compressed treatment is not recommended. The depth at which the root flare is found also influences whether or not to attempt treating the tree. Unfortunately not all treated trees will improve after treatment. Your Sherdec Arborist will likely recommend other treatments for trees deemed to be a worthwhile risk for girdling root removal.

Photo 2: *The root flare of this tree is below the soil surface. Note that the trunk is straight going into the soil. Roots grew up to the surface girdling the trunk. Two girdling roots have been removed, leaving two bands of compression visible.*

Photo 3: *The trunk of this tree was severely compressed by girdling roots (which have been removed). A severely compressed trunk increases the likelihood of the tree blowing over in a storm.*

Girdling roots being removed after excavation. Notice the crack on the trunk associated with the girdling root.