

The Cause, Assessment, Symptoms and Treatment of Stem Girdling Roots

Girdling roots are a common problem of trees in urban landscapes. Girdling roots result when roots coil around the base of a tree trunk and restrict the flow of sap in the tree. Trees growing in natural forest settings do not develop girdling roots. The root systems of trees grown in containers or in ball and burlap often respond to their restricted growing space by encircling the tree trunk. This tendency is made worse when the tree is planted too deep in the soil after it is brought home from the nursery. Maple and linden trees seem the most susceptible to formation of girdling roots, but it can happen to nearly any tree.

Assessment and Treatment Methods

A tree with girdling roots often looks like a telephone pole at its base, with the sides of the trunk going straight into the ground. This is a strong contrast to the "flare" at the base of a forest-grown tree, where the roots radiate outwards from the trunk. Affected trees show a lack of vigor; leaves are sparse, smaller than normal and turn color early in the growing season. Large sections of the tree may be dead or dying off in advanced cases. In some cases, girdling roots may be visible at the soil surface, along with a flattened area of the trunk where it has been compressed by the girdling root tissue. Most of the time girdling roots grow in multiple layers below the soil surface.

Excavation of the soil around the base of the tree is necessary to determine the extent of damage to the trunk. This procedure is done with compressed air from an Air Spade®, a tool designed to remove soil without damaging tree tissues. Some trees can regain their health after removal of girdling roots. Trees already in advanced decline will be unlikely to recover. Each case is different and results are difficult to predict. The chances for a tree's survival depend on the number of girdling roots found, the degree of compression of the trunk, and the length of time the tree has been affected. Removal of the tree may be the only option if trunk compression is severe.

Possible Indications of Stem Girdling Roots

- No visible root flare at soil surface.
- Trunk looks like a telephone pole going into the soil.
- Trunk appears pinched at soil surface.
- Trunk is flattened on one or more sides.
- Sun scald or frost cracks visible on the trunk.
- Tree canopy is thin or sparse.
- Die-back in upper tree canopy.
- Leaves are wilting, scorched, or smaller than normal.
- Leaves may be off-colored (yellow).
- Trees exhibit early fall color and leaf drop.



Girdling Roots



Assessment of root flare area with Air Spade®

Care for Continued Health of Your Tree

Trees stressed by girdling root syndrome are more vulnerable to other problems. Special care should be taken to:

- Prune deadwood regularly.
- Keep tree roots well watered.
- Prevent mulch from touching trunk of tree.
- Utilize the Root Enhancement System® to improve soil conditions.
- Prevent insect infestations and disease infection.

Rainbow Treecare is working closely with garden centers, landscapers and homeowners in the Twin Cities to assure that new tree plantings do not promote girdling root syndrome. If you have any questions on how to plant a tree properly to avoid circling roots, please contact your Consulting Arborist, review our on-line fact sheet on tree planting, or call our office at 952-922-3810.



Crack in trunk, no visible sign of root flare.



Compressed tree trunk.

