

LANDSCAPE ORNAMENTAL SERIES

A Guide for Louisiana Landscape Professionals



Managing Girdled Roots in the Landscape

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Many of us have encountered a tree with a noticeably deformed root system. This often appears as woody roots that tightly wrap and circle the base of a tree trunk, oftentimes extending to just below the soil surface.

This phenomenon is known as root girdling and is a common sight in urban landscapes. This undesirable feature is aesthetically unappealing and can have harmful effects on the health and development of the tree.

The coiling roots can limit the flow of water and nutrients between the above and below ground portions of the tree, prevent outward growth at the base of the tree and decrease the stability of the plant.



Figure 1. A severe case of root girdling.

There are several reasons why root girdling may occur in the landscape. One of the more common issues occurs during the transplanting process, when the root ball of a woody plant is installed too deeply in the soil. Roots require oxygen to convert the sugars received from the canopy into energy. This process is slowed due to the lack of oxygen available to the roots, as most of the soil-oxygen is near the soil surface. Similarly, there is generally more water and nutrients available in the upper soil layers. If the root ball is planted too deeply, roots may grow upwards in search of oxygen, water and nutrients. Oxygen availability issues can also occur when improper mulching practices are used. Incorrectly placing mulch in “mulch volcanoes” (i.e., mulch is piled near the tree

base, covering the trunk) limits oxygen availability where the roots and the trunk meet. Other common reasons for girdling roots include when nursery stock becomes root-bound and encircles the inside of the pot due to the restricted space or when trees are transplanted into compacted soils.

Some visual symptoms of root girdling include small trunk diameter which can result in leaning or tilting of the tree; stunted growth; twig, branch or leaf die back; early leaf drop or early fall color; leaf scorch; cracks in the stem; or decreased resistance to abiotic or biotic stressors. However, these symptoms can also occur due to several abiotic or biotic stressors, such as weather patterns, nutrient deficiencies, drought, pests and diseases.



Figure 2. Take the lopper to both sides of the root and line up the blade with the soil surface to make a clean, flush cut.



Figure 3. Use a handsaw for thicker roots. Gently saw the girdled root out, being careful not to harm the roots you wish to keep. Let the saw teeth do the work, there should be little pressure applied.

Several practices to prevent root girdling from occurring in your landscape include:

1. Prior to transplanting, conduct a thorough inspection of the root ball and look for encircling roots, particularly when removing container crops from the pot, or signs and symptoms of girdling roots already occurring at the root ball surface. If any of these defects are detected in container crops, prune these roots out of the root ball and with a shovel or spade, make an "X" cut at the bottom of the root ball to break up the roots and encourage more growth, or separate some of the root mass by hand. For ball and burlap plants, make sure that the burlap is peeled back from around the root collar as to not choke the tree out from oxygen or confine the trunk.
2. When digging a hole into the soil, make sure the hole is approximately two to three times wider than the width of the root ball. Ensure that the top of the root

ball, or the root flare, is at least slightly above the surface when installing the tree. Avoid excessively compacting the soil when backfilling the hole.

3. If mulch is to be applied, refrain from installing the mulch improperly, such as creating mulch volcanoes or applying it in a very thick layer.

Measures to remove girdled roots:

1. If there are existing girdling roots in your landscape, a saw or loppers can be used to remove the coiling root.
2. As shown in Figures 2 and 3, take a pair of loppers or a saw and select one side of a girdled root. Try to make a clean cut, flush with the soil surface, and repeat the cut on the other side of the root that is emerging from the soil surface.
3. If the root girdling is extensive, consider contacting a local certified arborist to fix the girdling roots.

For more information on girdled roots, please contact your local LSU AgCenter extension office or visit www.lsuagcenter.com.

Photos by Kristopher S. Criscione.



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