

HOME GROUNDS FACT SHEET



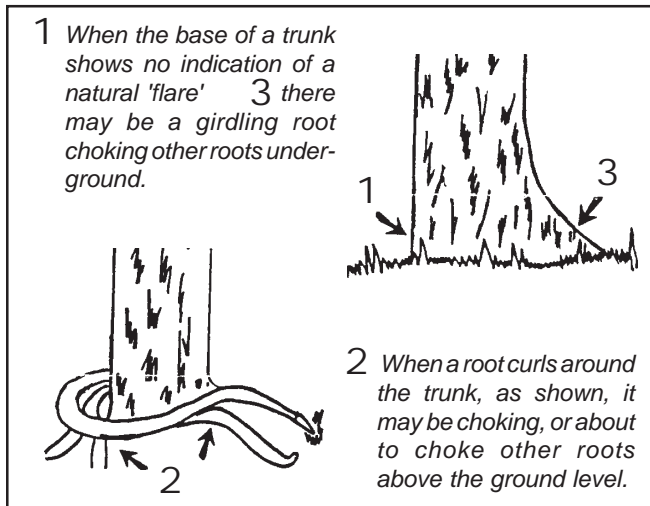
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Does Your Tree Have Girdling Roots?

by George Hudler - Cornell University



Trees with off-color foliage, marginal leaf/needle scorch or increasing branch dieback over a period of several years are exhibiting the symptoms of decline. They may soon die if the causes of the decline are not corrected. When improved watering and fertilization fail to restore a tree's vigor, the cause may be below the soil surface in the form of a root wrapped around the stem - a "girdling" root. Girdling roots are especially common on maples, and many of them that were planted in the 1950's and 1960's have since died because of them.

The first symptom of damage from a girdling root is usually leaves on one or two branches turning their normal fall color several weeks earlier than leaves in the rest of the crown. In later years more leaves show this symptom, and eventually whole branches begin to die. Examination of the trunk at the soil line usually shows that a normal root flare is absent and at least one side of the trunk appears to go straight into the ground - like a telephone pole. With a bit of digging, you can usually find one or more major roots growing around the trunk; they have the effect of girdling the tree as both the trunk and the root(s) enlarge each year.

Girdling roots do not occur in undisturbed forests, but are common where trees have been transplanted from one site to another, like from nurseries to landscapes. One reason for this is the manner in which

trees are planted. Sometimes, transplant holes are too small and the planter chooses to "screw" the tree into the hole rather than take the time to enlarge it. In other cases, the tree is grown in a container that is too small to accommodate the increasing size of the root system. The roots are forced to grow in a circular fashion rather than their normal pattern of radiating out from the stem. When the roots and stem get big enough to grow against each other, trouble ensues.

Girdling roots can also occur when a tree is transplanted into a hole filled with good soil but surrounded with impervious clay or some other obstruction. Roots tend to take the path of least resistance, and in these circumstances are more likely to change direction and eventually contact the stem.

Prevent girdling roots by adequately preparing the planting site to ensure that there is ample room for the root system to develop. Be sure the planting hole is big enough to accommodate the root ball (or root mass in bare-root trees) without distortion. If bare-root trees have obviously deformed roots as a result of nursery culture, the roots should either be reoriented or pruned before being covered with soil. Also, be sure that the planting hole is not too deep. Roots crossing roots pose a minimal threat to the health of a tree, but if the stem is submerged enough to allow the stem tissue to be engulfed by a root, lethal strangulation is much more likely to occur. Digging a deep hole and then backfilling with loose soil is not advisable because the tree will eventually settle to an undesirable deep level.

Larger trees showing symptoms of girdling roots may be restored to improved levels of vigor if offending roots are removed. Cut the troublesome root(s) with a sharp chisel at any convenient point, but be sure not to injure the stem in the process. If more than two girdling roots are involved, take only two the first year and remove the others in later years. This is because even though a root may be girdling a tree at one point, it's likely to be nourishing that tree at another. Removing a girdling root may have the same effect that removing a normal root may have, so it should be done with care and moderation. At the same time, prune out dead branches in the crown to ensure that the tree doesn't become a threat to people and property below.

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