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The Myth of Staking:
"Newly planted trees should be staked firmly and securely"

The Myth

When I moved back to Washington State in 1997, I was appalled to see tree bondage rampant in many urban landscapes. The oozing, swollen wounds around staking wires are just too much for me to bear and I will admit to playing tree liberator on more than one occasion.

Tree staking is another example of what I've come to label as "enabling" behavior. Like planting hole amendment, tree staking is done with the best of intentions but without regard to long-term tree health. Rather than helping a tree develop root and trunk growth that allow it to stand independently, improper tree staking replaces a supportive trunk and root system. This artificial support causes the tree to put its resources into growing taller but not growing wider. When the stakes are removed (if they ever are), the lack of trunk and root development makes these trees prime candidates for breakage or blow-down. A comparative example is what is seen when forests are cleared for housing development. A few trees near the center of the stand are left on the lots; these trees are tall and skinny with well-developed crowns. But in the first good windstorm, down these trees come. They have lost the supportive protection of the surrounding trees and are unable to stand alone.

If it is necessary to stake a tree, there are acceptable methods that allow proper trunk and root development while providing temporary support and protection. In urban areas, this is especially true because of poor, shallow soils that hinder root development and the potential of mechanical injury from people and vehicles. (In fact, properly installed tree guards made of decorative grillwork are an excellent way of protecting street trees permanently from mechanical damage. These tree guards are not attached to the trees but stand alone and should be upsized as the tree grows.)

It's interesting (and comforting) to find that nearly all current books and reputable web pages are correct in their assessment of staking. Then why are there so many incorrectly staked trees in the landscape? I believe there are several contributing factors:

- 1) Containerized nursery materials are often staked for stability, and many consumers don't understand that the staking material needs to be removed upon transplanting.
- 2) Oral and written information from some retail nursery centers instruct their customers to stake their trees regardless of the need for doing so. These instructions are sometimes incorrect in addition to being unnecessary.
- 3) Some landscape architect specs describe outdated staking procedures, and these are followed by the landscape installation company.
- 4) There is little to no aftercare for many tree installation sites. Without a management plan as part of an installation agreement, staking materials will not be removed at the appropriate time (if ever).

The first two practices are probably responsible for most incorrect staking in home landscapes, while the last two factors are probably responsible for most incorrect staking in public and commercial landscapes.

The Reality

The three cardinal sins of tree staking are:

- Staking too high
- Staking too tightly
- Staking too long

Trees that are staked improperly will:

- Grow taller, but with decreased trunk caliper
- Develop less trunk taper (or even a reverse trunk taper)
- Develop xylem unevenly
- Develop a smaller root system
- Suffer rubbing and girdling injuries from stakes and ties
- Be more likely to snap in a high wind after stakes are removed
- Often be unable to remain upright after stakes are removed

The Bottom Line

- Most containerized and correctly dug B&B materials do not need staking; bare root trees often do.
- If trees must be staked, place stakes as low as possible but no higher than 2/3 the height of the tree.
- Materials used to tie the tree to the stake should be flexible and allow for movement all the way down to the ground so that trunk taper develops correctly.
- Remove all staking material after roots have established. This can be as early as a few months, but should be no longer than one growing season
- Materials used for permanent tree protection should never be attached to the tree.

For more information, please visit Dr. Chalker-Scott's web page at <http://www.theinformedgardener.com>.