

DON'T STAKE YOUR TREE'S LIFE ON IT!

Staking of newly planted trees is not always necessary. In fact, staking can have detrimental effects on the development of a tree. When compared to trees that have not been staked, staked trees have less trunk diameter growth, a smaller root system and are more subject to breaking or tipping after stakes are removed. In addition, staked trees may become injured or girdled from the staking materials. Almost every response to support staking prevents a tree from becoming strong. For the most part, the sooner a tree can stand alone, the sooner it will become strong. Yet, staking does play a valuable part, if done properly, in protecting young trees from equipment, animals, strong winds and vandalism.

SUPPORT STAKING

Support staking is necessary when planting bare root trees which don't have a root ball heavy enough to keep it upright. Staking is typically not needed for balled and burlapped trees, though sometimes needed when their trunks are not strong enough to stand without support or to return upright after a wind. Weak trunks are common on many container grown trees. They should be attached to the stake at the lowest level at which the trunk can be held and the top will return upright after being bent to the side. This location will allow the tree to sway, stimulating trunk diameter growth, while providing adequate support. The higher the support, the less the crown has flexibility to sway when taking the brunt of strong winds.

When only one stake is used, there are usually several points of attachment; besides the direct effects of trunk immobility, other difficulties may occur: 1. The ties may girdle the trunk. Frequent inspection can limit this. 2. Greater stress will occur at the top ties during a wind if the trunk below is not able to flex in the opposite direction as the top is blown back and forth;

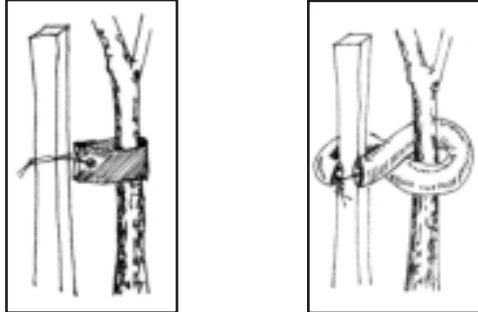
the trunk is then more likely to break at the top tie or to be seriously deformed. 3. The stake may also shade the trunk, causing the xylem cells to elongate more on the shaded side so that the tree actually grows away from the stake. Two stakes can minimize the problems encountered in support staking; some arborists and landscape architects even recommend three stakes. Two support stakes with one flexible tie near the top of each will hold the tree upright, provide flexibility, and minimize trunk injury and deformation.



The two or three stakes suggested for proper tree staking usually provide enough anchorage for roots. Place one loop or figure eight tie between each stake and the tree trunk. Make sure that the bindings on the tree can flex without the tree rubbing against the stake. The ties must not be so tight or inflexible that they are likely to damage tender bark or girdle the expanding trunk. There should be enough slack so that the tree can move up to two inches in every direction. If the trunk can't move, it won't grow in girth and will remain weak.

MATERIALS

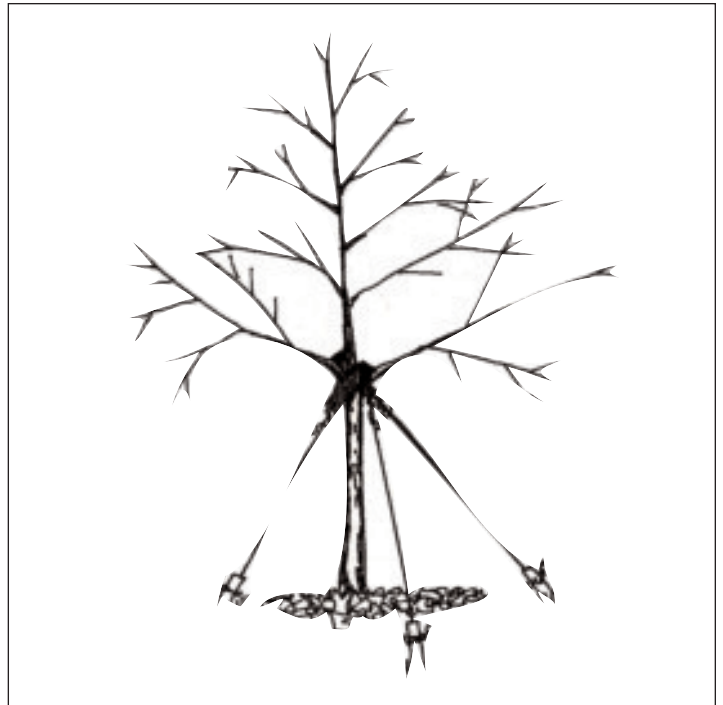
Any material used should contact the trunk with a broad, smooth surface and have enough elasticity to minimize trunk abrasion and girdling. Secure the tree to the stakes with broad, soft straps or lengths of hose. Common tie material includes elastic webbing, belting and polyethylene tape. A number of



patented ties and support devices are also available for staking. UV sensitive polyethylene fabric ties that only last a year will minimize the problem of girdling, although they may allow stake rubbing.

GUYING

Trees greater than four inches in diameter are often supported with guy wires. Trees are generally guyed with three or four wires that are anchored in the ground with stakes. Guy wires should be passed through a section of hose to protect the tree or attached to the end of straps. The wires and hose or straps are passed around the tree at crotches and the wires are twisted to tie them off. The guy wires must not be tied tightly around the tree trunk as this could cause girdling. Any modification to reduce friction will minimize damage to the tree. Guy lines and stakes should be driven into the ground at the drip line and brightly marked to prevent tripping or mowing over them.



If support systems are left in place for more than two years the tree's ability to stand alone may be reduced, and the chances of girdling injury are increased. Staking and guying systems should be checked within one year to be sure they are not injuring the tree. You can usually remove staking by the end of the first growing season.

PROTECTIVE STAKING

To protect trees from mowers, foot traffic or equipment, make sure the staking is very visible. Sink three stakes into the ground, 15 inches or so from the tree, and run a line between them to make a triangle. Protective staking systems should be checked regularly to be sure they are not injuring the trees, but can be left in place as long as necessary.

References

- Arborists' Certification Guide. International Society of Arboriculture. 1993.
- Ball, John and Travis Konda. Staking Your Claim. American Nurseryman. August 1, 2000. pp.66-68.
- Harris, Richard W. Arboriculture: Care of Trees, Shrubs, and Vines in the Landscape. 1999.
- Ohio State University Extension Fact Sheet. Staking and Guying Trees. www.ad.ohio-state.edu