

Tree Failure Prevention - A Necessary Evil

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Tree maintenance to prevent trunk and limb failure is a necessary evil. It's necessary because it has to be done but evil because sometimes it shouldn't be. From staking of young trees to crown reduction of mature trees, failure prevention is a high priority for everyone in the green industry. But a lack of understanding of basic tree biology and growth characteristics has led to some crazy human interventions. Why these uninformed decisions by landscapers and arborists? Why this craziness? Let's talk about it.

First, trees in nature don't use stakes or wires and they do pretty darn well. Have you ever wondered why? The answer is simple: no human involvement. Consider their natural setting. Trees begin growing with a distribution of foliage along their entire main stem. They often resemble shrubs more than trees in the early years. Until trees are established and anchored securely, lower branches, including suckers and watersprouts, remain on the trunk and main stems. These small low branches at or near the base of a tree serve many important functions:

- They protect the tree from predators, sunscald and mechanical damage.
- They feed the trunk at their point of attachment, increasing trunk taper.
- They distribute windthrow equally along the length of the trunk. This minimizes tree failure caused by strong forces beneath the canopy when low limbs are removed.

Some trees, like mesquites, were never meant to be beach umbrellas! For millennia these trees have developed characteristics to protect against windthrow. In their natural setting they have a low profile in the landscape with numerous lower branches and a weeping growth habit with upper limbs draping to the ground. In our modern landscapes, we fight against this natural development by removing all the low growth on many of our trees. And we wonder why they don't stay vertical!

Another example of fighting against nature involves isolating certain trees in the landscape. Eucalyptus and other species are found in groves in their natural setting. In a typical grove, trees are only a few feet apart. With limited sunlight, lateral branches are "few and far between." Those few branches are relatively short and spindly. There simply isn't space or sunlight to support longer limbs. As a result of these factors, these species genetically lack the ability to cope with open-growth form when they are placed alone in the landscape. When we install a solitary eucalyptus, it's easy to understand why it throws limbs. It's not "programmed" to support heavy side limbs or a spreading multi-stemmed crown.

Another uninformed intervention is lousy staking. Staking is an important part of young tree care, but it's often done poorly. One frequent mistake is to stake too rigidly. This doesn't refer to girdling a tree with tie materials. That's another problem. This is about failing to allow the tree to move sufficiently on the staking system.

The goal of staking is to train a tree to be on its own, not to keep it from moving. If the goal was to eliminate movement, we'd add concrete to the backfill! If staked properly, the main stem of a tree should be able to move slightly in the wind. If it can, the roots begin to spread and anchor. But when a tree is staked too rigidly, not allowing some movement of the main stem, it sends a message to the roots that they don't need to anchor to hold up the tree. If the stakes do all the work, the roots take a vacation. And a weak root system can't support a growing canopy.

So how do you stake properly?

- Most importantly, stake the tree firmly enough to prevent it from falling, but loosely enough to allow the entire stem to move slightly, not just the tree above the tie.
- Next, monitor and adjust the system when needed and thin the crown periodically to reduce strain on the stakes.
- Last, when the tree is ready to remove the stakes, thin the crown again to assure it survives the first growing season.

Does all this work take more time? Is it worth the trouble? Yes and yes. But the good news is that within a year your tree should have an established root system, great trunk taper, and it'll be off to a great start in life.

Conversely, trees tied too tightly have little root development or trunk taper. The crown continues to grow over the weak root system and each year it's harder and harder to wean the tree off the stakes. The worst case is the tree outgrows the stakes and eventually fails.

To insure the future health of your young trees, follow these guidelines:

- Buy good plant stock. Avoid lollipop trees with no trunk taper and no low growth. Some nurseries and growers understand the importance of low growth and they sell trees with suckers and watersprouts.
- After planting, encourage low growth. Don't prune watersprouts and suckers so aggressively. Even on lower scaffold branches, leave at least 1/3 of the watersprouts. These branches will love you for it. The watersprouts will help develop branch taper needed to support increasing end weight as the tree matures. Have you seen those stripped out trees with no taper at the base of the branches? Much of this is caused by over-pruning watersprouts in the early years.
- Plant and prune to compliment a tree's natural growth habit. Don't fight genes. They always win.
- Stake intelligently. Allow movement of the main stem. Monitor the staking system regularly. Remove stakes as soon as possible.

Tree failure prevention will be a part of our lives as long as trees grow and the wind blows. But with some wise choices and common sense you can have some awesome trees that don't just survive, but thrive.

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