



## *Blowing in the Wind*

*by Marilyn Loser*

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The tops of newly leafed-out trees are thrashing violently during another San Luis Valley windstorm as I write. The high winds have me thinking about the effects of wind on trees and characteristics of wind-tolerant trees.

Of course smaller trees have less surface area for wind to hit. And small or flexible leaves and branches can bend with the wind more easily than huge, rigid limbs and thick, large leaves. Trees that have open branching rather than dense canopies allow the wind to flow through more easily. A healthy, wide-spreading root system helps anchor a tree.

I have had trees blow over. Fortunately, they weren't near people or our house. Several were in an aspen copse in the corner of our yard. Usually aspens are quite wind resistant as their branches and trunk are fairly flexible and leaves have a flat petiole (the slender stalk that attaches the leaf to the branch) allowing the leaves to twist in the wind.

My problem was that the trees were getting most of their water from the interior of our yard. Hence, roots developed primarily on the north side of the trees. They did well for several years, but as they grew larger, our prevailing south-easterly wind knocked them over one by one. Now I only plant trees in locations where they get water from all directions!

Folks who've lived in the valley for any time are very aware of the wind and often stake newly planted trees to keep them from falling over. In some circumstances and conditions this is OK for a limited time. The new trees planted in the Alamosa Cemetery this spring are in an extremely windy location so were staked.

If you decide to stake a tree, make sure it can still sway in the wind and remove the staking after a year. It may seem surprising, but root systems of trees staked over a long period of time tend to be very weak. One study showed that staked trees tended to grow taller and have narrower trunks than those that were unstaked. Unstaked trees with fatter, shorter trunks are considered to be stronger and less likely to break in high winds.

The shape of a tree affects its wind resistance. Open grown, strongly tapered trees common in urban areas are most stable according to William Chaney of Purdue University.

Much of the research on tree wind resistance has been done in conjunction with hurricane research. Many of the tree species studied, such as palms, don't grow in the San Luis Valley. However, searching a number of lists I found a few trees that might do well here.

There are several bristlecone pines (*Pinus aristata*) in town. These trees are known to grow in high elevations under very windy conditions. There are several Hot Wings Tatarian maples (*Acer tataricum*) along Main Street that are doing well. Even when mature, these are fairly small trees.

Recently, we've planted Russian hawthorn (*Crataegus ambigua*), Accolade elm (*Ulmus* 'Morton'), and Kentucky coffee (*Gymnocladus dioica*) trees around town. It's probably too early to tell how well they'll do.

Trees considered to have medium-low wind resistance include boxelder (*Acer negundo*), silver maple (*Acer saccharinum*), and green ash (*Fraxinus pennsylvanica*).

*"I never saw a discontented tree. They grip the ground as though they liked it, and though fast rooted they travel about as far as we do. They go wandering forth in all directions with every wind, going and coming like ourselves, traveling with us around the sun two million miles a day, and through space heaven knows how fast and far!"* John Muir