

## **Lessons Learned During Hurricane Season 2005**

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Four hurricanes blew over the Florida Keys, stripping plants of foliage, twisting branches, breaking fronds, uprooting trees, spraying salt water on the foliage and inundating the plant's root zone. Here are some lessons learned on how to help your landscape plants weather future hurricanes.

**Wind Lesson 1:** How wind tolerant are your landscape plants? During Hurricane Andrew, the most wind resistant native trees were the Spanish Stopper, Gumbo Limbo, Lignum Vitae, Paradise Tree, Redberry Stopper, and White Stopper.

**Wind Lesson 2:** Trees that are preventively pruned are less likely to fall than neglected trees. Pruning trees in an effort to minimize the impact of defects can reduce the likelihood of failure during storms. Research (Jones and Gilman 2004 ISA conference) and observations in recent storms point to the importance of preventive pruning in preparing for the storm season. Reducing the length of over-extended limbs and reducing the length of branches and stems with bark inclusions lessens the probability of branches breaking from the tree.

**Wind Lesson 3:** Apparently healthy trees can blow down because supportive roots have decayed or soil becomes soft from saturation. Trees blow over in strong winds primarily because roots are rotted or the soil becomes soft from rain or a combination of both. Naturally occurring fungi including armillaria and others can decay roots creating unstable trees. Root rot can be diagnosed with careful, regular inspections by accomplished arborists. Poor drainage or excessive rainfall rates can make soil soft and unable to hold trees erect.

**Wind Lesson 4:** Trees with one dominant trunk fare better than trees with codominant stems, for instance, trees with one major trunk with widely spaced branches throughout the canopy. In many cases, this strong structure has proved to be better adapted to storms than the codominant stem form. Hire arborists with the ability to create and maintain strong structure in your shade trees by appropriate pruning techniques. This is the best way to help your tree make it through the storm with little damage.

**Wind Lesson 5:** Root defects such as girdling roots cause trees to blow over. Roots that circle next to or near the trunk were associated with numerous fallen trees. One huge root circled the trunk causing a trunk constriction. This inhibited root system and root flare from developing properly on one side of the tree and appeared to cause decay in the center of the trunk. Trees with circling roots often blow over in the direction away from the circling root.

**Wind Lesson 6:** Trees grown in confined soil spaces are prone to blowing over. Trees with root systems confined to relatively small soil spaces are not as stable as trees that are allowed to develop, and therefore having more spreading roots systems.

**Wind Lesson 7:** Queen Palms are prone to falling over; Cabbage, Royal, and Phoenix Palms are much more resistant to blow over.

The most wind resistant form for a tree is one with a central leader and a well-spaced framework of branches that go around and up and down the trunk. There should be no narrow forks or branches leaving the trunk at an acute angle, since these branches are likely to split under stress. Limb crotches that form a U shape (45 to 90° angle) are less likely to split than narrow V-crotches of less than 40°.

A wind-resistant tree is the result of regular care since its early life. Young trees should not be cut back to make them bushy, but rather be encouraged to form a strong leader with well-spaced laterals. Later pruning should consist of forming a well-spaced framework of strong branches and a pleasing outline to the tree. Remove dead or diseased branches anytime.

It is important that you are aware of a common tree practice that is harmful to the tree. Tree or shrub "hatracking" or "topping" may cause the tree to put on a thick flush of growth that acts as a sail or kite in high winds. Trimming trees into a lollipop shape increases the likelihood of causing them to topple over during winds. Further, severe "hatrack" pruning can damage the underground root system and weaken the tree (especially in wet, soggy soil). Finally, contact your local Planning Department to see if there are regulations about proper pruning techniques and pruning without a permit.

Some pruning is better to be completed by a professional. If you have to stand on a ladder or raise a chainsaw overhead, contact a professional. Look for someone who is ISA (International Society of Arboriculture) certified. Contact the ISA at 217/355-9411 check your local yellow pages for a listing of arborists in your area. If in doubt about proper licensing, contact your county and/or city occupational licensing department. Get three bids, so you have a better understanding of the cost and amount of trimming that needs to be done. Be sure to compare the bid specifications for items such as amount of trimming included and debris removal, not just the cost.

**Salt Lesson 1:** How salt tolerant are your landscape plants? Landscape plants' ability to tolerate salt is based on salt water spray on the foliage or by storm surge water that floods the root zone. Salt tolerance of landscape plants is divided into three categories: low, medium, and high. **Low** indicates that the plant is largely intolerant of salt on the

roots or the leaves; **moderate** refers to plants that will require protection from direct spray and intensely saline water but can tolerate mildly brackish water and some incidental spray; **high** indicates a plant that can be grown in exposed seaside locations.

**Salt Lesson 2:** Storm surge waters carry with them large amounts of sand, silt, organic material (such as seaweed and small sea creatures), and anything else it could float and pick up. Once the storm subsides, the water will begin to settle and flow off the islands leaving us with deposits of almost everything imaginable. Most of the storm tides were gone within a few hours, except for isolated low pockets.

**Salt Lesson 3:** Once the storm surge water recedes, immediate care should be given to valuable plants. If possible, foliage and branches of plants should be washed with a strong stream of water to remove all salts, mud, and other debris. All over the ground there will be a thin to heavy layer of silty material. When this dries, it will actually seal in the salts around the plant roots but, more devastatingly, will cut off the air supply to those roots. This material should be raked away as quickly as possible from under the roots of shrubs and small trees. Do your best to remove it back to the farthest reaches of the plant's branch tips. Large trees will tolerate this silt better than smaller trees so do the most thorough job of attempted removal around your shrubs and fruit trees.

**Salt Lesson 4:** Some plants such as introduced exotic species may have a problem with these salt deposits but most plants will survive them. The silt probably offers more of a hazard to plants than do the salts. It is difficult to determine exactly which plants you are likely to lose after the storm. Severity of damage will depend upon the type of plant, age of the plant, amount of salt and silt that remains, period of submergence, etc. Certainly after a severe

storm the gardener will come to appreciate the hardiness of some of our "native" plants which have stood through many storms and see the value of preserving them in the landscape whenever possible instead of going totally to introduced species.