

Pisa Tree Syndrome Appear Common in Many Commercial Parking Lots

By Mark Arena, Horticulturist, Clemson Extension Service

The leaning tower of Pisa is a historical landmark in Italy and a popular photo opportunity for many tourists. This historic tower is probably one of the most marveled leaning objects on Earth and engineers are making a concerted effort to save the falling structure. The reality is that a poor understanding of hydrology combined with a few other mistakes has resulted in a structural hazard. Here in the USA a new leaning object has entered the same status as the leaning tower of Pisa – one that can be observed in certain parking lots in the Low Country of South Carolina (*see picture #1*).

Over the last several years I have noticed many leaning trees in several newer commercial parking lots. Based on this observation, a survey was conducted of five large commercial parking lots located in the Low Country. The number of leaning trees ranged from 6% - 25% of the total tree population. Leaning trees represent several concerns for the landscape installer. The first concern is that of a safety hazard if the problem is not corrected. As the tree continues to grow, the weight of the crown will eventually cause the tree to topple over (*see picture #2*). The fallen tree may land on a vehicle, in a roadway, and or on a person. All of which can create harm and a potential legal issue. The second concern is that it looks unsightly and the aesthetic appeal of the tree is lost. Finally, it reflects poorly on an industry that generally prides itself on quality work.

Trees that fail to root and stay upright can often be associated with poor planting techniques. This was part of the problem in the plants that were inspected, however, an additional issue was observed. Most plants were suffering from being root bound or failed to send roots out into the surrounding soil. The failure to send out roots will result in a tree that is not properly anchored and is susceptible to falling over.

I suspect that due to the slow-down in plant sales within the nursery industry, many trees are staying in containers longer than projected which has generated more root bound plants than normal. In order to rectify this condition, one should thoroughly inspect the root ball of all container grown plants prior to purchase. If this is not possible, a root inspection needs to be conducted at the time of planting. This should be a standard practice for all container grown plants that will be planted in the landscape. If roots are discovered circling at the base of the root ball or trunk of the tree root pruning is necessary to correct the problem. Scoring and/or cutting the roots in three to four evenly spaced locations of the root ball can accomplish this. Be sure to use a sharp knife or pruning shears to produce a clean cut. This will allow the wounds to heal quickly and promote root growth. After scoring the roots gently pull the root ball apart to help redirect the roots. This procedure will allow the roots to grow away from the root ball and properly grow and develop. Properly conducted root pruning results in a quality root system that will support the tree for a lifetime.

If you are planting a tree without professional assistance, it's imperative that you learn the proper planting techniques to ensure a good start for your new landscape additions. New research indicates

that planting hole size, backfill amendments, planting-depth, watering techniques, and staking are all important factors that determine a tree's life expectancy. Do your research before digging that first hole in the yard by reviewing available factsheets on the subject at the Clemson Extension Home and Garden Information Center (<http://www.clemson.edu/extension/hgic/>) or the South Carolina Forestry Commission website (<http://www.state.sc.us/forest/>).



Picture #1 – leaning tree



Picture #2 – up-rooted tree, crown weight became greater than the roots were able to anchor.