

Flooding and Trees, Larry Figart, Urban Forester

Wow, in the last issue I was writing about drought stress in trees as we were in the middle of one of the driest springs in recent history. Fast forward two months and we have just gone through two tropical storms that have dropped record rainfall amounts all over NE Florida. There are many areas that have had standing water for extended periods of time. The question I will try to answer is what excessive soil moisture (flooding in some cases) do to trees.

The first thing to consider is that many of our trees were already stressed by drought and root disease and now they are stressed again by too much water. It is extremely hard to predict which trees will be able to make it through and which trees will not. There are some things about how trees respond to the environmental conditions that are not understood very well and two trees of the same species right next to each other that were subjected to the same conditions may respond in totally different ways.

In order to understand what environmental conditions the trees are under we need to look at the soil. Optimal soil conditions are when 1/2 half of the soil volume is comprised of pore space. Of that pore space, the larger pores are filled with air, while the smaller pores are filled with water. This balance allows the roots to respire, giving off carbon dioxide and taking in oxygen. When soils are waterlogged, the pore space is entirely filled with water. In this instance the roots cannot “breathe”. If the soil remains waterlogged, the roots shut down, and soon anaerobic conditions take over giving rise to root diseases such as pythium and phytophthora.

The best method to manage trees that were subjected to waterlogged conditions is to promote practices that will improve tree vigor.

Newly planted trees that may have been planted too deep, would benefit from being replanted at the correct depth. Mulch that has been piled up against the trunk of the tree should be removed, allowing the trunk to dry out. Aerating the soil using a soil auger will help restore the air exchange in the soil.



The tree symptoms that may develop from waterlogged soils include dieback and decline. Additionally root disease and wood boring insects may further weaken stressed trees. Trees that retain brown/dead leaves should be checked for signs of recovery. Those possessing defects that decrease their structural integrity, making them more prone to wind throw and structural failure, should be removed from the landscape immediately. If you are unsure about a tree's condition, have it inspected by an ISA Certified Arborist.

Flood Tolerant Trees, Larry Figart, Urban Forester

If you live in an area where the soils are poorly drained, or where there is a high water table, it is a good idea to plant trees that are adapted to wet conditions.

These trees have adaptations that help them cope with low soil oxygen conditions. One of the most common adaptations that trees have to waterlogged soils is their development of a wide base at the root flare. This “buttressed” base gives the tree more stability in wet soil. Another adaptation to



waterlogged soil is seen in the bald cypress and their “knees”. The most probable use for cypress knees is for stability in flooded soils. The following is a list of trees that can tolerate waterlogged soil.

- Blackgum (*Nyssa sylvatica*)
- Bald Cypress (*Taxodium distichum*)
- Boxelder (*Acer negundo*)
- Sugarberry (*Celtis laevigata*)
- Green Ash (*Fraxinus pennsylvanica*)
- Sweetgum (*Liquidambar styraciflua*)
- Coastal Plain Willow (*Salix caroliniana*)