



TREE NEWS

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CONTRIBUTING AUTHORS

REDUCING STRESSORS IN THE LANDSCAPE

Trees are a valuable and significant part of most any landscape. While trees in forested ecosystems routinely live for decades or even centuries, many studies have shown reduced survivability for trees in urban landscapes. Urban trees are subjected to numerous stressors that lead to damages, decreased tree vigor, slow declines, and ultimately, early tree death. While we often attribute this decline to an insect pest or a disease, many times the most significant stressors are a result of human activity.

Certainly, insect pests, diseases, and environmental stressors can lead to declines in trees, too. Many arborists refer to this slow decline as a “mortality spiral” (Hilbert et. al., 2019). While trees are a living entity, that which will eventually die, when thinking about a mortality spiral, Hilbert et. al., describes the mortality spiral as a series of linked events that build up stress in trees over time.

HEALTHY MATURE TREE:

- Let’s imagine a healthy, mature Oak Tree (*Quercus* spp.) in the middle of a pasture.
- Maybe this tree is suddenly hit with a period of extended drought (think of our 2019 flash drought here in the Southeast).

NOW THE TREE IS PREDISPOSED:

- Next, the lot is sold for development, with the intentions of saving the tree for the community.
- Construction and subsequent development soon begin around the tree.

NOW THE TREE HAS BEEN INJURED:

- The soil around the tree is graded and compacted to make way for a new entrance into the community.
- Numerous large-diameter lower limbs are removed to allow tall vehicles into the community.
- Maybe a model home is soon thereafter built near this mature tree with the addition of an irrigation system (which severs roots during installation).
- Next, truckloads of soil and sod are brought into the new lot; ultimately smothering any remaining roots that are not on the road side of the tree.
- New fertilizer and watering regimens are soon applied to a tree that previously never received these supplements.

NOW THE TREE IS DECLINING:

- As a result of the cumulative factors above, the tree begins to slowly decline as evidenced by canopy dieback and further limb losses.
- At this point, the tree becomes more vulnerable to opportunistic insect pests, pathogens, and wood-decay organisms.

NOW THE TREE IS DEAD:

- After the numerous and successive injuries (and opportunistic attacks) sustained by the events above, the tree ultimately succumbs to its injuries and dies.

Now, certainly this is only one example of how a mortality spiral may unfold. Any number of other examples could also be identified. Unfortunately, many times we see the mortality spiral begin at the time of planting. We may choose low quality nursery stock, plant it too deeply, overwater it that first few months during establishment, create competition with turfgrasses, and maybe even damage the trunk through our mulching and/or our mowing practices. Take this time to better understand that it is rarely one single factor that kills a mature tree. By understanding and reducing stressors in the landscape, we can better promote healthy and long-lived urban trees.

Works Cited: Deborah Hilbert, Lara Roman, Andrew Koeser, Jess Vogt, and Natalie S. van Doorn. [“Urban Tree Mortality: What the Literature Shows Us.”](#) Arborist News. October 2019. 22-26. Print.



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