

Landscape Tree Decline and Drought Stress

By: Kelly Feehan, Extension Educator

Release: Week of August 28

When trees have branch dieback, it is referred to as decline and can be due to a number of factors from age to mechanical and herbicide damage, disease or insect issues, and environmental stress like drought. Usually it is a combination of these impacting trees over the years.

When I'm asked why a tree is declining, a follow up comment to the question is often that an automatic irrigation system is used and so water stress is not the problem or contributing factor.

Automatic irrigation systems are typically set for turfgrass which has shallower roots than trees. To effectively water turf, the soil needs to be moistened about six inches deep. To effectively water trees, the soil needs to be moistened about 18 inches deep.

Relying only on turf irrigation systems, those that run frequently for short periods, to water trees leads to shallower rooted trees that are more prone to water stress.

When an irrigation system is set to automatic, this can lead to a layer of saturation that restricts oxygen movement into soil. Plant roots need oxygen to grow and function as much as they need water and this adds additional stress to all plants, even turfgrass.

What can be done to address turf and tree conflict? First, use automatic irrigation systems manually. Turn them off and only turn them on when turfgrass shows signs of needing irrigation. Inexpensive soil moisture meters can also be purchased and used to determine when to water.

Determine how long the system needs to run to moisten the soil six to eight inches deep. This will be different for each landscape due to different soil types, exposure, slopes, irrigation systems, water pressure and more. Use a soil probe, moisture meter, or screw driver to determine how deep your system waters in a set period of time.

Because trees have deeper, more extensive root systems that can extend outward over twice the height of the tree, they do not need as frequent irrigation as turfgrass. Depending on soil type and weather conditions, water trees deeply about once a month.

Avoid other stress factors as well. Do not plant trees too deep and use a four to six foot diameter ring of mulch, three inches deep, around trees to prevent mower and weed trimmer damage.

Herbicide stress is becoming more common and difficult to avoid. Digging weeds before they go to seed will reduce the need for herbicides. Mowing lawns higher and maintaining a dense turf will also reduce weeds.

When weed killers are used, avoid applying them on windy days, hot days above 85 degrees F., or on extremely calm days. For broadleaf weeds like dandelion and ground ivy, apply herbicides in late September and October when trees are less tender and ready to drop leaves. This timing also increases weed kill.

As for insects and diseases, stressed trees are more likely to be affected. Reducing stress can reduce pest problems as well as how negative their impact is. When a disease or insect is suspected, positively identify what it is and whether control is needed beyond managing the tree for vigor.

Trees are a high value, long term investment that are expensive to remove and difficult to replace. There are many things we can do differently in our landscapes to protect trees and increase their life span.