

January 27, 2024

Stressors Cause Tree and Shrub Decline

Why is my tree or shrub dying? The tree seemed fine last year, but this year it is almost dead. Often this is difficult to answer. Factors leading to the decline of a tree or shrub are many and complex.

Figuring out the original stressor or stressors leading to the plant's decline is difficult because they may be gone. The primary stressor started the decline in the plant's health with the secondary disease-causing organisms and /or insects contributing to the continued decline or death of the woody plant. Careful examination of the plant, growing site, and knowledge of the site's history requires close examination. During the evaluation of the woody plant, look for some common stressors.

What are the soil conditions of the growing site? Deep soil without a hardpan at the bottom is desirable according to Dr. Nicole Gauthier, University of Kentucky Extension Plant Pathology Specialist. If the soil is compacted, water does not drain and exposes roots to waterlogged soil. This potentially leads to roots rotting and suffocating since the roots need oxygen. In addition, if the roots cannot grow into the soil, they grow near the soil surface and are susceptible to drying out due to a drought. Evaluating the planting site and selecting the

woody ornamentals that live best in similar sites to the soil and environmental conditions of their natural habitats are less likely to become stressed.

Does the woody plant have room to grow? The mature crown size, plant height, and root spread are important to consider. Removing more than 25 percent of the branches reduces food production (photosynthesis) for the tree and stresses it. Don't top a tree.

The roots of a woody plant extend 1.5 to 2 times the spread of the branches. Physical barriers such as foundations, paved roadways, and sidewalks stop root expansion and reduce the amount of water and nutrients available. Construction sites are troublesome for existing trees. New construction digs through roots and breaks them. Heavy equipment driving over the roots compacts the soil and suffocates the roots. Adding soil over the roots and against the trunk changes the grade and suffocates the roots causing the tree to decline and die over time. Protect existing trees at construction sites by placing barriers out to the edge of the branches around the tree to avoid compacting the soil, breaking roots, and piling soil against the trunk.

Was the woody plant properly planted? If planted too deep, the trunk looks like a telephone pole going straight down into the ground. If poorly planted, the roots could suffocate or the trunk could rot. The root flair should be visible on the trunk of a properly planted tree or shrub. Also, girdling roots circle the trunk like a noose stopping the growth and choking the tree. Often only one side of the tree may look flat like a telephone pole which is a sign of a girdling root. This is usually first noticed by the leaves in one portion of the tree's crown turning a premature fall color in the summer and a few branches dying in that area. Placing the woody plant at the proper depth and unwinding the roots at planting avoids these stressors.

Are there wounds on the trunk? Lawn mowers and string trimmers damage the trunk stopping nutrient and water uptake to the leaves. If the damaged site does not callus over, this can allow insects and disease-causing organisms to penetrate. Avoid trunk damage by applying an organic mulch, like shredded hardwood bark, around the tree 2 to 3 inches deep to keep mechanical devices from hitting the root flair or larger roots closer to the top of the soil.

What has the weather been like this year and in the past? When woody plants are not hardened-off by cooler temperatures before a sudden freeze in the fall, the tissue in branches is damaged. In addition, as woody plants are exposed to warmer temperatures in the winter, plant tissues become de-hardened making them susceptible to sudden freezing temperatures again. If the branches do not die right away, the damage in the water-conducting tissue in the branch shows up when the temperature is high in the summer and the leaves wilt or the branch may die because not enough water gets to them.

Drought is severe on young plants. But don't forget about mature woody plants under stress. The key is to avoid overwatering them. Check the soil moisture before and after watering. Apply water to the roots, which also extend beyond the drip line, slowly. Drip irrigation through soaker hoses or drip lines are preferred to avoid runoff. Generally, plants prefer 1 to 1.5 inches of rainfall per week during the growing season. Soil conditions, plant age, and plant species may dictate that less water is needed.

For more information about stressors that lead to woody plant decline, contact the Daviess County Cooperative Extension Serve Office at 270-929-3108 or

annette.heisdorffer@uky.edu. More information can be found in "Stress and Decline in Woody Plants" (ID-50) at https://www2.ca.uky.edu/agcomm/pubs/id/id50/id50.pdf.

Annette's Tip:

Applying nitrogen fertilizer to a severely stressed tree or shrub may further damage it and put it under more stress.

Upcoming Event:

The Owensboro Regional Farmers' Market Informational Meeting and Sign-Up for new and past vendors for 2024 is January 30 at 6:00 p.m. at the Daviess County Cooperative Extension Service Office. An application for selling at the market during the year is online at Owensbororegional farmersmarket.org. Deadline for completing an application is February 15.

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