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July 16, 2022

Transplant Shock Affects Young Trees and Shrubs

My young tree is turning brown. Why? Determining why a tree or shrub is dying is difficult. The word young often is a keyword. Many times, a tree or shrub transplanted within five years can die from transplant shock.

Transplant shock is the inability of the woody plant to recover from being transplanted into its current growing site. In other words, under stressful conditions, plants are not able to recover, continue to decline, and eventually die according to Dr. Nicole Gauthier, University of Kentucky Extension Plant Pathologist. Transplant stresses are most often the culprit of the death or decline of newly planted trees and shrubs compared to plant diseases.

Even though leaves and shoots emerge on the branches, these are not indicators of plant establishment. Transplants are considered established when primary roots expand into the native surrounding soil, branch out, and produce sufficient feeder roots on their tips.

If the tree or shrub fails to produce new, healthy roots or does not establish root systems in new planting sites, transplant shock often occurs. The root-related problems are contributed to one or more reasons such as the stresses that occurred when the tree or shrub was removed from

its original site, injury while being moved, improper planting techniques, and/or poor cultural practices.

Symptoms of transplant shock include canopy thinning, dieback, leaf scorch, leaf tip burn, premature fall color, limited stem growth, premature defoliation, delayed leaf emergence in spring, secondary disease problems, and secondary insect problems.

The causes of transplant shock and related stresses may result from the plant material. Trees not suited to Kentucky's climate suffer. A root ball that is too small for the amount of top growth causes stress. In addition, if the roots dry out between digging and transplanting, root damage and death result. If the leaves and twigs of the plant are not protected from wind during transport from the nursery to the landscape, the plant is stressed.

The growing site also contributes to stressing a tree or shrub. Poorly drained soil damages roots. Many woody plants do not like "wet feet" which can occur when located near gutter downspouts, low-lying areas, or in poorly drained soil. Soil compaction reduces the penetration of water. Compacted soil also reduces oxygen in the soil needed by roots, just like water-logged soil. Remember to select the best type of plant suited to the location.

Improper planting techniques contribute to transplant shock. If the root ball is allowed to dry out or freeze before planting, the roots are injured or killed. Mechanical injury to the trunk and branches while digging, moving, or transplanting causes damage that becomes noticeable later. A planting hole that is too small crowds roots, and "glazed" sides of a planting hole prevent root expansion. Other hazards include leaving nursery tags, twine, burlap, or wire baskets intact that can girdle roots, trunks, or limbs.

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Another improper planting technique is to allow the roots of container-grown plant material to continue to grow around, or spiral, rather than growing outward. As well as planting it too deep or too shallow. The excessive use of fertilizer during planting will damage the roots.

Poor follow-up care puts stress on the plant as well. If watered too little or too much, the plant suffers. Light frequent sprinklings do not help either. High levels of nitrogen results in excessive top growth compared to root growth creating a situation where the roots cannot take up enough water to sustain the new growth. Even though trying to be careful, mower or string trimmer injury results in weakening the woody plant.

To minimize transplant shock, prevention is the key. Plant healthy and appropriate landscape trees and shrubs for the site. Check how well the soil drains by conducting a percolation test. Determine how much sunlight is available and match it with what the plant needs.

Some steps for reducing transplant stress and possibly reversing transplant shock symptoms include relocating a handleable plant to a more appropriate site during the dormant season. Water the plant during dry periods with about one to one and one-half inches of water per week if it has not rained. Use fertilizer according to a soil test result one to two years after transplanting. Applications should be made during late fall according to the test. If surrounding lawns are fertilized, there should be sufficient amounts of fertilizer available to tree roots.

Apply mulch two to three inches deep over the entire root zone to conserve soil moisture, control weeds, and protect the plants from mower and string trimmer damage. Spread out the mulch and avoid high narrow piles around the trunk.

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For more information about transplant shock, contact the Daviess County Cooperative Extension Service at 270-685-8480 or Annette.heisdorffer@uky.edu

Annette's Tip:

Properly planting trees and shrubs increases the likelihood of preventing transplant shock. "Transplant shock: Disease or Cultural Problem" http://plantpathology.ca.uky.edu/files/ppfs-or-w-19.pdf , provides more tips for the successful establishment of trees and shrubs.

Upcoming Event:

Daviess County Fair entries for youth and adult open classes and 4-H categories can be found in the fair book available at the Daviess County Cooperative Extension Service Office or online at https://daviess.ca.uky.edu/fair. Fair categories include vegetables, fruit, flowers, herbs, farm crops, hay, canning, photography, cake decorating, and 4-H exhibits. Entries need to be delivered to the Exhibit Building on Tuesday, July 19, from 4:00 to 6:00 p.m. at the fairgrounds in Philpot.