

Landscape Tree Decline

Landscape tree decline may be a combination of several biotic, environmental & chemical factors that slowly kill trees. If stresses add up, trees may go into decline. Stressed trees are more apt to be attacked by and succumb to insect pests and disease damage. Many tree species have a decline listed as a notable problem, such as declines of oak, maple, and sycamore. However, this can occur on any tree, and may continue over several months to years. So a decline is not one thing or factor killing a tree, but is caused by the additive stresses from several factors, such as the ones listed below.



Large red maple with restricted root system showing a thin canopy, a later symptom of tree decline
Joey Williamson ©2012 HGIC, Clemson University

Early symptoms of tree decline are pre-mature fall coloration, late spring leaf development, a decrease in twig and stem growth, leaf scorch, and pre-mature leaf drop. Later symptoms of tree decline are dieback of larger limbs and branches, sprouting from the trunk, heavy seed crops, the foliage is noticeably smaller and lighter green, and thinner foliage over the entire canopy.

Factors to Consider at Planting

- 1) Improper siting of tree
 - too little or too much sunlight for tree species
 - too small a planting site
 - tree species is not cold hardy enough for location in state
- 2) Improper tree planting
 - planted too deep
 - not removing ball & burlap strapping from around trunk at planting
 - root girdling

Factors Related to Maintenance

- 3) Improper fertilization & soil pH
 - high pH soil or very acidic soil
 - excessive nutrients or soil salinity
 - use of fast release & salty fertilizers
 - nutrient deficiencies
- 4) Improper irrigation
 - too frequent, too shallow, or excessive watering
 - leaking irrigation system saturating the soil
 - salty well water used
- 5) Improper pruning
 - topping a tree
 - not pruning dead branches allowing rot to move into the trunk

- 6) Problems with mulching
 - lack of mulch to shade soil and conserve moisture
 - excessively thick mulch - reduces air flow into the soil
 - mulch piled up against trunk can cause trunk damage
- 7) Physical damage to trunk
 - impact from lawnmowers & weed eaters

Environmental Factors

- 8) Changes in climate
 - wide swings in temperatures, especially warm quickly followed by cold
 - extreme summer heat
 - late frosts
- 9) Splits, cracks and loose bark on Southwest side of trunk
 - caused by cold weather coupled by winter sun shining on Southwest side of tree, which excessively warms bark
- 10) Natural drought &/or water competition
 - competition from nearby turfgrass



Large oak with a thin canopy resulting from root damage due to soil compaction and drought injury
 Joey Williamson ©2012 HGIC, Clemson University

Soil Problems

- 11) Soil disturbance
 - grading changes
 - trenching for utilities
 - digging for walls, driveways or construction foundation
 - anything nearby that cuts the roots, such as tilling for lawn establishment adjacent to the trees

- 12) Soil compaction
 - driving or parking over root zone, such as during home construction or improvement
 - areas where rainfall won't penetrate hard clay soil and runs off sloped landscape

Chemical Injury

- 13) Broadleaf herbicides or other chemicals over root zone
 - 3-way herbicides, triclopyr, atrazine, etc. injure roots
 - cleaners for driveways or pressure washing solutions for homes
 - glyphosate (Roundup) misapplication onto the trunk of thin-barked trees
- 14) Air pollution
 - especially ozone

Damage by Disease, Insect Pests, and Animals

- 15) Diseases
 - foliar leaf spots, leaf and branch blights, powdery mildew, rust, leaf scorch
 - trunk rot, wilt diseases
 - trunk & branch cankers
 - root rot
- 16) Insect pests
 - borers in trunks, limbs, or twigs
 - scales on foliage, twigs or trunk
 - foliar feeders & galls
- 17) Damage by animals
 - voles, deer, beavers, sapsuckers & squirrels

For more information on tree planting, maintenance, diseases and insect pests, numerous HGIC fact sheets address these issues in detail at:

- [Trees](#)
- [Other Landscape & Garden Topics](#)
- [Insects & Diseases of Trees](#)

This information is supplied with the understanding that no discrimination is intended and no endorsement by the Clemson University Cooperative Extension Service is implied. All recommendations are for South Carolina conditions and may not apply to other areas. Use pesticides only according to the directions on the label. All recommendations for pesticide use are for South Carolina only and were legal at the time of publication, but the status of registration and use patterns are subject to change by action of state and federal regulatory agencies. Follow all directions, precautions and restrictions that are listed.