



Gardeners Helping Gardeners Succeed

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Recognizing Tree Decline



Tree decline is a difficult term to define because so many factors can cause it to occur. Some of the most common symptoms include stunted growth, premature leaf drop, late spring leaf development, sparse foliage, leaves that are light green or yellow, and twig and branch dieback.

Once in decline, trees often never recover – this is because **the most visible signs of decline only become apparent after two or three years of stress**. By this time, the tree has used up much of its reserves trying to survive.

Helping trees avoid the perils of decline requires the landscape manager or homeowner to recognize what environmental conditions, both man-made and natural, cause the stress responses that lead to decline.

Poor Growing Conditions

Many species of trees have specific site requirements, such as soil texture and pH, nutrient levels and drainage that must exist for the tree to thrive and overcome other stresses. Urban landscapes create many other problems, such as poor soil quality, proximity of buildings sidewalks, streets, utility pipelines and other trees.

Diseases and Insects

Most trees are able to withstand some leaf loss, but several years of it due to insects and diseases can lead to decline. Many pests cannot survive in a healthy tree. Once a tree becomes weakened from drought, pests invade rapidly.



Low Temperature Injury

There are three primary ways low temperature can affect trees. Winter desiccation, especially in evergreens, is caused by dry, freezing winter winds as the frozen ground prevents the tree from taking up water from the soil.

Freeze damage can occur when late or early hard freezes hit before a tree has gone dormant or after a tree has come out of dormancy. Trees that are marginally hardy for colder zones are especially susceptible.

Sunscauld is common in thin-barked trees. Injury occurs one of two ways – either the living bark tissues suffer dehydration following exposure to winter sunlight or tissues in the bark are killed die to rapid temperature changes after sundown in winter.



Chemical Injury

Herbicides used in the lawn may have an adverse effect on trees, as can the improper use of insecticides and fungicides. De-icing salts can also be harmful to trees, especially sensitive species such as crabapples and white pines. Using soil sterilants over rock or mulched areas can cause small deformed yellow and red colored leaves in deciduous trees and twisted needles on evergreens.

Physical Injury

Adding or removing soil around trees can also cause stress to the root system, as well as the compacting effect of heavy equipment operated on top of the root zone. Other equipment that removes bark, such as a string trimmer or mower, may allow for insect and disease infestation. Animals can cause physical damage by stripping the bark from the branches of the plant. Deer can cause considerable damage, including death, when they 'rake' the tree with their antlers.



Girdling Roots

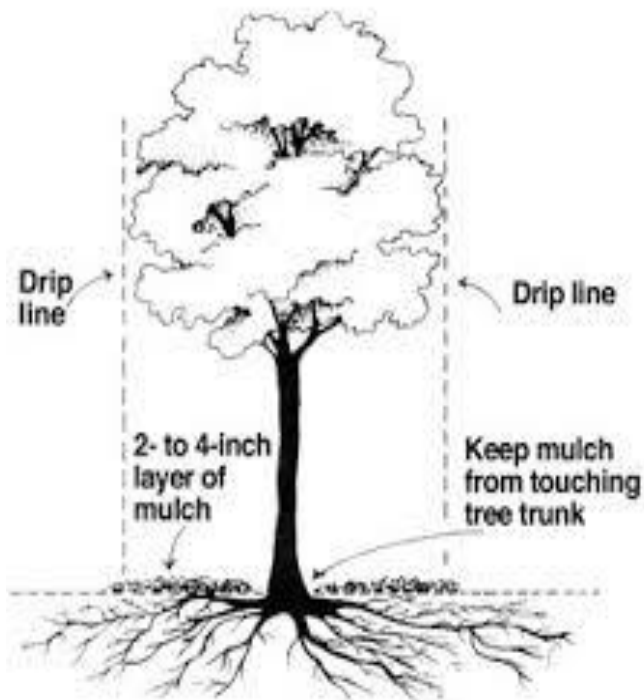
Occasionally, a root will grow around the circumference of a tree at or slightly below the surface of the soil, restricting water flow and strangling the plant.

Drought

Short-term damage caused by one dry spell includes wilting, leaf scorch and some defoliation. Long-term damage happens over a period of years and includes stunted growth, branch dieback, and possible death. Many woody plants can take up to three years after a drought to display negative long-term effects.

What To Do?

Here are some guidelines for avoiding a decline situation:



- Start out right. Plant trees that match the site and consider the limitations of existing hardscapes and other vegetation on the new trees.
- Avoid damage. Mechanical damage can be avoided by mulching a 4-foot diameter circle around the trunk 2 to 6 inches thick. The mulch also mimics the natural nutrient recycling process that occurs in wooded areas.
- Incorporate organic matter into your soil.
- Water well. Water infrequently but deeply with soaker hoses or drip irrigation when regulations allow. Once-a-week waterings are usually adequate, but it makes sense to check the soil moisture level with a soil probe to ensure this is working.
- Fertilization. Proper fertilization helps the tree get the nutrients it needs, especially in problem soil. A soil test is the best way to determine what the tree does and doesn't have available. Fertilizer should be applied at the drip line at the proper rates and is most effective when applied in winter and spring just before growth occurs. The fertilizer must have regular water to push nutrients into the soil and for the plant to absorb it.