

Some Oaks Experiencing Slow Death

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A number of oak trees are sick or dying in some residential areas. Homeowners are naturally concerned with such loss and many have questions about the cause.

The decline of oaks on developed property is primarily due to environmental changes during construction and the landscape maintenance practices following. Let's examine a typical oak tree growing under natural conditions and compare that to conditions that it must endure following development.

An oak in a natural plant community enjoys a nearly perfectly balanced root to shoot ratio – just enough roots to furnish water and nutrients to the entire top portion of the plant. It is also naturally mulched, with old leaves, twigs and other fallen debris being added to the soil surface each year. A close examination of this natural mulch reveals a complex vertical profile with varying degrees of decomposition in progress. This gradual breakdown of organic forest litter provides a constant release of recycled nutrients and organic matter.

The oak also enjoys necessary free gas exchange within the root system. Since the soil is not compacted, carbon dioxide and other gases are expelled to the surface and oxygen then enters the root zone.

Now let's look at new home construction and its effects on the root system of a large oak. Consider that the average root spread is three times the canopy spread and that most roots are within the top one foot of soil, with most of the fine feeder roots within the top four inches of soil.

First, the forest litter is scraped away to make room for the foundation and surrounding features. Ditches are dug to accommodate underground utilities and irrigation systems. The movement of equipment compacts the soil in other areas of the landscape.

In many cases, it is necessary to raise or lower the grade for drainage purposes. Since many of the feeder roots of trees are within 3 to 4 inches of the soil surface, some even growing in the leaf litter, much root loss can occur during this process. Soil fill can also damage by placing feeder roots too deep in the ground for oxygen to reach the root system.

So following construction on a typical sized lot, a tree might be left with only part of the original functional root system. At this point the tree will tap into food reserves in order to survive and begin trying to develop enough additional roots to sustain the top. It actually goes into a survival mode.

If the tree's root loss is excessive, it will either begin to self prune or suddenly turn brown and die. Self pruning means that since the tree's limited root system cannot sustain an entire canopy, the response is a dieback of the ends of branches or entire branches die. In other cases the tree will hang on as long as possible, until all of its food reserves are depleted, and then it will die.

Most frustrating is the fact that there is a delayed reaction, or lag time between the time that the damage is done and the time that the symptoms are evident. Large oaks might live for 5 to 10 years even though much of the

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root system has been lost.

There is no magic cure for a tree that has been severely stressed during the development of property. Such damage can be prevented by taking precautions during construction. This might mean shifting the location of the house to save a large tree, planning drainage patterns ahead of time and keeping heavy equipment away from the root zone.

After the home is constructed trees often suffer from certain landscape maintenance practices. One of the worst is attempting to grow lush grass under a big oak tree. Large trees and grass don't mix. There is too much competition for water and turfgrass does poorly in dense shade. The extra water, fertilizer and weed killer applied to turf is often not what the tree needs.

Instead, try to supply the oak with more natural growing conditions. Allow natural mulch to collect. If you must have something growing beneath the tree, use a turfgrass alternative such as a shade tolerant ground cover.

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