

Leaf Scorch on Trees and Shrubs



Leaf scorch is common on hard maples and may also appear on oak, ash, beech, and tulip trees, as well as various shrubs and evergreens. Leaf scorch is essentially the manifestation of an acute water shortage in the tree or shrub. Water imbalance has been created

in the plant, and the leaf tissue dies as a result of this lack of water.

Symptoms of Leaf Scorch

The vascular system of the plant carries the water to the tissues of the plant. As water moves up through the trunk into the branches and into the leaves, it moves from the major veins until it reaches the edge of the leaf. If water is inadequate, only the leaf cells near the major veins will receive adequate moisture. Thus, some areas will brown and die, which explains the pattern of leaf scorch (dead tissue between the midveins and around the edges of the leaves). Sometimes smaller, angular, brownish specks will appear before all the tissue dies. Some plants (such as tulip poplar) produce large, brown, dead circular spots within the leaf tissue. On evergreen needled trees and shrubs, the ends of the needles will often turn a light tan color. As the moisture stress continues, an entire branch or segment of a branch will turn brown.

Leaf scorch is usually more noticeable in hot, dry weather or when hot, dry winds have been

blowing. Leaf scorch is commonly seen when this sort of weather immediately follows periods of wet, cool conditions. The wet and cool weather may have created soil conditions favorable for good root growth, or conditions actually damaging to previously existing roots. When the hot, dry air occurs, the root system is not adequate to provide the upper part of the tree or shrub with sufficient moisture.

Often leaves on one side of a plant may be affected while the remainder of the plant will be normal. This may occur on the side of the tree in which the root system is limited for some reason or other. Perhaps a street or a sidewalk is impeding the proper development of roots on one side of the tree or shrub.

Causes of Leaf Scorch

- Heat reflection from building and paved surfaces
- Root injury from water, gas, or sewer line construction
- Root injury from previously dry or wet weather (secondary microbes will often cause injury)
- Root injury as a result of graded and compacted lawn areas
- Root injury because of fill dirt or changes in grade level. Girdling roots that have expanded since the time the tree or shrub was originally transplanted
- Roots that were damaged in previous months from excess de-icing salt during the winter period

- Trees or shrubs that have been subjected to new, paved surfaced over their established root systems
- Root injury from gas line leaks resulting in a change in soil atmosphere

Control of Leaf Scorch

Since leaf scorch results from an acute water shortage to leaf tissues of the tree or shrub, the control involves relieving any water shortage as quickly and as meaningfully as possible. Sometimes leaf scorch will occur so suddenly that it will be impossible to do much until the following growing season. The advent of the symptoms of leaf scorch should trigger an investigation of the health of the root system of the affected tree or shrub. If one of the above causes of poor root health can be determined, then corrective measures can be taken. Sometimes it will be difficult to tell which of the above causes are evident on the affected plant in question. Some digging and probing of the soil area may need to be done. If natural gas leaks are suspected, the gas companies will generally come out and check the soil atmosphere for the presence of abnormally high quantities of natural gas.

It may be necessary to vertically mulch the affected tree or shrub to open the soil in the root system area. Vertical mulching consists of drilling or digging holes 12 to 18" deep around the feeder root zone of the tree or shrub. The

technique is similar to that used for the fertilization of trees or shrubs by digging holes and applying fertilizer to these holes. Fill the holes with a porous mixture of gravel, calcined clay particles, coarse pumice, or vermiculite, perhaps with a bit of peat mixed in to hold moisture. The vertical mulching will open the soil and admit more oxygen, allow excess water to drain away from the root system during wet periods, and allow the percolation of water into the root zone when dry weather occurs.

Other alterations can be done in affected areas if the conditions warrant. Drain tile can be installed, surface water re-directed, or other site improvements can be made. If fills and grade changes have been made around an existing tree, one will need to extensively vertically mulch or establish good drainage to keep the covered roots from suffocating and causing scorch and decline of the tree.

Finally, trees or shrubs, which do not tolerate the poor root health situation, should not be planted in sites subjected to these conditions. If a tree has declined and died with an associated scorch condition, it would be best to plant another type of tree or shrub in that site. As mentioned above, the hard maples, ashes, oaks, tulip poplars, and some of the needled evergreens are particularly sensitive to these sorts of conditions. Their use should be avoided in these types of sites.

Would you like additional information?

Additional information is available on-line. Please see [MSU Extension-Oakland County's publications](#) as well as [MSU Extension's Bookstore](#) on campus.

Contact our [Plant & Pest Hotline](#) (248/858-0902) for assistance with plant identification, pests and diseases, weeds, trees and shrubs, lawn, flowers, fruits, vegetables, grasses and groundcovers, native plants, plant propagation, and many other gardening topics.