

TREE DECLINE

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Samples from landscape trees often come into the OSU Plant Disease Clinic with the complaint of a thinning canopy and premature leaf drop. Usually, samples do not have visible foliar or twig disease but do exhibit several symptoms of a nonspecific ailment called decline. Decline refers to progressive loss of tree vigor and health.

SYMPTOMS

Trees in decline have an unthrifty look to them. Often, leaves are fewer than normal, and overall growth has been poor. Internode length (the space between each year's twig bud scars) decreases from several inches to less than 0.5 inch. Leaves may have yellow or brown (necrotic) margins, and tips may be smaller than normal. There may be premature autumn coloration and early leaf drop. Twigs at the ends of branches may die back, and often limbs at the top of the tree will be drying and bare of leaves. Dead branches can occur next to apparently healthy branches.

CAUSES

Tree decline never happens overnight. Decline can occur as a result of a single disease or environmental even or, more commonly, from stress that has been present for many years. Often more than one stress factor is involved. Trees under stress often are predisposed to other problems, such as those caused by insect borers, opportunistic organisms, and injury from extreme climatic factors.

Any of the following may contribute to tree decline.

Injury to the trunk from:

- String weeders or lawn mowers (repetitive minor injuries have a cumulative effect)
- Poor pruning practices
- Weather events (sudden drops in temperature, wind, hail, or lightning)

- Animals' feeding on the bark (deer, elk, beaver, porcupine, mice, vole)
- Other injuries to the bark
- Disease

Injury to the roots from:

- Standing water or poorly drained soils
- Seasonal high water table
- Soil compaction
- Insufficient room for root growth
- A change in grade of the surrounding soil
- Recent construction in and around the root zone (sidewalks, driveways, sewers, etc.)
- Root rots

Injury to the whole plant from:

- Insufficient water (lack of irrigation, drought)
- Not being climatically adapted to the area in which it is growing
- Being planted in subsoil or other unsuitable soils (especially true in new housing developments)
- Transplant shock
- Poor fertility
- Chemicals
- Girdling roots

CONTROL

Established Plants

Insufficient water over the course of several years is the most common cause of tree decline. Trees need supplemental irrigation in the dry summer season even if the spring has been wet. Additional irrigation is particularly important for trees transplanted within the past 3 years or that have been stressed from any of the factors listed above. Water deeply and infrequently (once a week) rather than sprinkling lightly for 5 or 10 minutes a day. When the soil 4 inches below the surface feels dry or only slightly damp, it is time to water. Well-

drained, sandy soils need more water more often than a loam or clay soil. Trees, especially conifers, in drier regions often need water during the winter to prevent desiccation.

Identify sources of stress and eliminate them if possible. Mulch the area under the tree to keep down weeds and to prevent the need for mowing right up to the trunk. Organic mulches such as leaf litter and wood and bark chips work well. Do not use plastic because it interferes with root-soil gas exchange and water infiltration. Spread the mulch 3 to 6 inches deep in a circle at least 3 feet in radius from the trunk. Keep the mulch from direct contact with the tree trunk. Protect trees from bark-chewing animals by using hardware cloth or other wire mesh placed around the trunk. In high-traffic areas or public landscapes, try to reroute foot or vehicular traffic to prevent compacting the soil in the root zone. Correctly prune out dead and dying branches to prevent invasion by insects and disease. Fertilize trees that show symptoms of nutrient deficiency (yellowish or off-color leaves).

Trees to be Planted

Prevention is the best control method. Select trees that are adapted to your cold hardiness zone (the nursery where you buy the plant should be able to help you with this). Place your new tree in an area where it can get the sun or shade it prefers.

Transplant properly and make sure to water adequately; newly transplanted trees can take up to 3 or more years to become well established in the landscape. Mulch around the tree and water as described above. Proper care in establishment can help to prevent tree decline and promote tree health.