

• Lawn watering in arid sites.

Homes are sometimes built in woodlots. In the West, this is especially damaging when dryland trees encounter watering required to maintain grass. Excess water at the tree trunk encourages growth of fungi that can kill trees.

Numerous other special situations exist. Sod producers, arborists or garden center operators

will have suggestions for correcting or alleviating problems that may arise concerning trees and turf.

Thin turfgrass growing around trunk-scarred, weak trees need not be a common sight in the landscape. With proper preplanning, proper plant selection and placement, and reasonable management, the many and varied benefits of both trees and turf can be readily achieved.

This information is brought to you in cooperation with the America the Beautiful and Urban and Community Forestry Programs of the United States Department of Agriculture Forest Service. These programs are the legislative results of the President and Congress working together to urge more Americans to plant and care for trees in cities, towns, and communities throughout the Nation.



Developed by the International Society of Arboriculture, a non-profit organization supporting tree care research around the world and dedicated to the care and preservation of shade and ornamental trees. For further information, contact: ISA, P.O. Box 908, Urbana, IL 61801. © 1991 International Society of Arboriculture.



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Trees and Turf



We've all seen thinning grass under large shade trees; large surface tree roots that cause safety hazards and mowing obstacles; young trees that don't seem to grow; and tree trunks badly damaged by lawn mowers or string trimmers. All of these undesirable affects can be caused by trees and turf growing too closely together.

Woody plants and turfgrasses are both critical components of design plans for homes, offices and parks. Trees and turf offer distinct personal, functional, and environmental benefits. Personal preferences for color, fragrance and form should complement the functional properties of size, shape, density, and placement of plant material.

Turfgrasses provide many of the same environmental benefits as trees. They

- change carbon dioxide into the oxygen we breathe
- cool the air by changing water into water vapor
- stabilize dust
- entrap air polluting gases
- control erosion.

Turfgrasses, in addition to being environmentally beneficial, are attractive in formal and informal designs. There are many advantages to combining trees and turf in the landscape.

Selection

When trees and turf are used in the same areas, extra attention must be given to plant

material selection in addition to the usual hardiness, climatic and soil needs. An effort should be made to make the trees and lawn compatible. Grass is generally a sun-loving plant. Most grass species will not grow well in areas that get less than 50 percent open sunlight; however, new varieties with improved shade tolerance are being introduced. Consult your garden center specialist or sod producer for recommendations of shade-tolerant grasses for your area.

In areas where the lawn is the primary design feature, select woody plants that do the least damage to grass growth and maintenance. The woody plants should be small, have an open canopy (trees that allow sunlight to penetrate to the ground) or have a high canopy. Select trees that do not root near the soil surface; surface rooting is most serious where a shallow topsoil is present. Remember, tree roots get larger as the tree gets older.

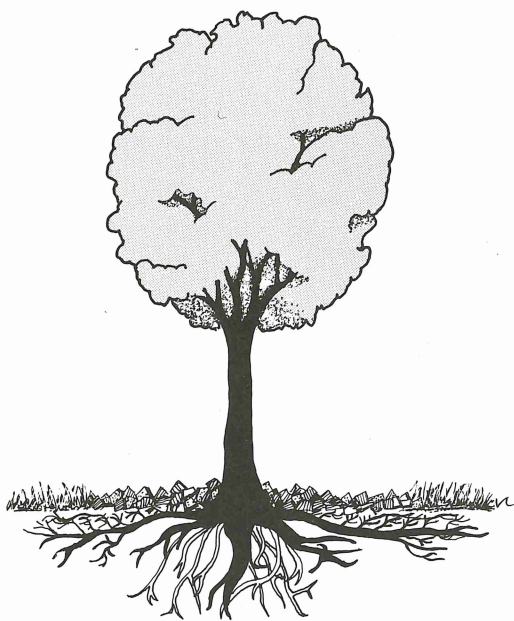
Competition

Trees, shrubs, ground covers, and lawn grasses all require sunlight, water and rooting space for growth. Each plant in the landscape competes with the neighboring plant regardless of type or species. Some even produce chemicals that are exuded from roots to restrict growth of nearby plants. For each plant to do well, it must have adequate space. Since perennial woody plants increase in size each year, they require additional space over time. The landscape design should provide adequate space for these plants to mature.

While shade may be the greatest negative, tree-related influence on turf growth, tree roots also create problems. Contrary to general thinking,



most tree roots are in the top three feet of soil. More importantly, the majority of fine, absorbing roots are in the top six inches of soil. While grass roots ordinarily occupy a much greater percentage of the soil volume than tree roots and out-compete them for water and nutrients, especially around young trees, grass root density is often much lower in areas where trees were established first. In these situations, tree roots compete much better for water and nutrients and prevent or reduce the success of establishing new turf.



Competition is especially important when transplanting, seeding or sodding. The newest plant in the area must be given special treatment and must receive adequate water, nutrients and sunlight. This frequently means that competing sod should be removed from around transplanted trees and shrubs, or that some of the lower branches should be removed from existing trees above a newly sodded lawn.

Mulching is an alternative to turf around trees and its use eliminates potential competition. A

2 to 4 inch layer of wood chips, bark or other organic material over the tree rooting space is recommended because it:

- helps to retain soil moisture
- helps to reduce weeds and controls grass
- increases soil fertility when mulch decomposes
- improves appearance
- protects the trunk from injuries caused by mowing equipment and trimmers that often result in serious tree damage or death
- improves soil structure (better aeration, temperature and moisture conditions.)

Maintenance Practices

Maintenance practices for trees and turf are different and treatment of one can unintentionally damage the other. Because tree and grass roots exist together in the upper 6 to 8 inches of the topsoil, treatment of one may damage the other. Fertilizer applied to one plant will also be absorbed by the roots of a nearby plant. Normally this is good; but excessive fertilization of either trees or turf can result in tree-crown or grass-blade growth greater than that desired.

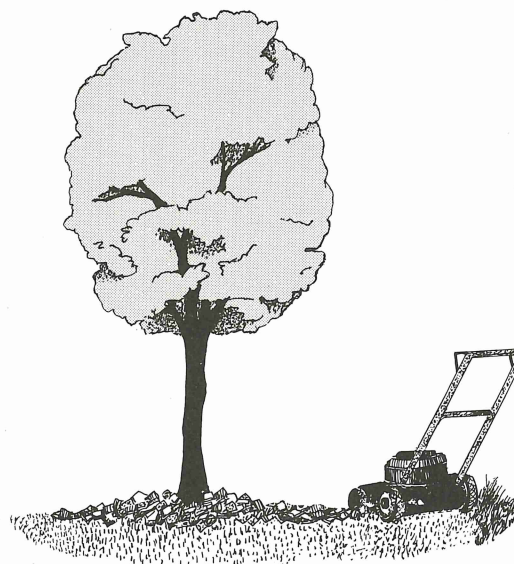
Trees and shrubs are broadleaved plants as are most weeds in lawns. Many herbicides or weed killers that are used in turf can cause severe damage to trees when misapplied. This can occur on windy days causing the drift to fall on non-target plants or on hot days when the herbicide may vaporize and diffuse into the air. While most herbicides do not kill tree roots, some, such as soil sterilants and a few others do. Herbicides that can cause tree damage have statements on their labels warning against using the product "near trees."

Problems can also result from misuse of other pesticides and fertilizers. Label instructions should be followed precisely, and pesticides/foliar fertilizers should not be applied on windy

days. Consult your garden center staff for advice on pesticide selection and use.

Watering of lawns is beneficial to trees if the watering is done correctly. Trees need the equivalent of one inch of rain every seven to ten days. Applying frequent, shallow watering does not properly meet the needs of either trees or turf and can be harmful to both.

Turf growing under or near trees should be mowed at the top of its recommended mowing height. Mowing off no more than one-third of the grass blade's height and letting the clippings remain on the lawn will do much to ensure a healthy and vigorous lawn. In an ideal situation, tree and turf maintenance would be handled by the same individual in order to maximize the benefits of all maintenance practices.

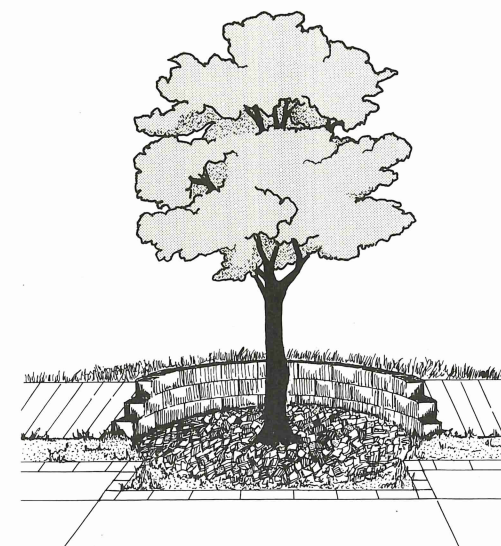


Special Situations

- **Construction damage prior to lawn establishment.**

Compaction of topsoil containing tree roots by heavy equipment kills more trees around homes than disease organisms. Compaction is

greatest when the soil is wet. Consult a tree care expert about tree protection prior to home construction projects.



- **Fill dirt around existing trees.**
Fill dirt is frequently added around existing mature trees so that a level or more visually desirable lawn can be established. Fill dirt changes the ratio of oxygen to carbon dioxide around tree roots and the roots may die. Consult a tree care expert before adding fill or constructing soil wells around tree trunks.
- **Establishing lawns around existing trees.**
Preparation of a seedbed for lawns requires disruption of the upper 4 to 6 inches of topsoil. This soil contains the feeder roots of trees. Damage to tree roots often results in declining tree tops.
- **Tree root buffers created with turf.**
A sufficiently wide strip of turfgrass between trees and hard surfaces such as building foundations, sidewalks and roads can help to reduce the potential damage caused by tree roots as well as provide an area where water and nutrients can soak into the soil and be beneficial to both turf and trees.