HORTICULTURAL

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Grasses in Shade: Establishing and Maintaining Lawns in Low Light

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Trees and shade create a naturally pleasing environment in the landscape. However, it is difficult to grow grass under trees because not only the quantity but also the quality of the light changes in the shade. In full sun, light is in the "near red" range of wavelengths; in the shade it shifts to the "far red," which is less effective in photosynthesis. In addition, dense canopies, particularly those of conifers, filter out the blue component of sunlight, which is critical for plant growth. The result of these changes is a reduction in photosynthesis and its products, including carbohydrates needed for plant growth.

Leaves, leaf cuticles and stems of plants are thinner in shade. Shoot density decreases and rhizome and stolon numbers decrease. Plant tissues are succulent and there is an increase in susceptibility to environmental stresses and disease. Transpired moisture from trees and grass, and moisture from dew forming under trees, take longer to dissipate, and the additional moisture may contribute to an increase in disease.

Shady conditions in combination with other plant stresses contribute to the difficulty of growing grasses under trees. For example, tree roots compete with turf for water and nutrients, and this competition can further weaken turf growing in shade. Allelopathic effects, such as the inhibitory effect of silver maple upon Kentucky bluegrass, are important between certain species of plants. Excessive organic matter from leaf litter will also inhibit grass. One or more of these factors make it particularly difficult to grow grass under sweet gum, maple and unpruned pin oak. On the other hand, grass is easier to grow under locust and poplar trees.

Success with growing grass in shade can be increased if the tree canopy is thinned and branches from the lower third of the tree are selectively removed. Also, trees can sometimes be removed without disrupting the harmony and function of the landscape.

Select and use grasses that have improved shade tolerance (see Table 1). Most of the fine fescues (hard, sheep, spreading, slender creeping and Chewing's) have very good shade tolerance. Tall fescue has good shade tolerance, while Kentucky bluegrass is the least shade tolerant of the cool-season grasses. Bermudagrass, zoysiagrass and buffalograss should not be used in shady locations. In areas where shade-tolerant grasses fail, consider shade-tolerant groundcovers or mulched beds instead of grass.

Pruning trees to improve light penetration

Pruning trees with dense canopies, such as maples, will allow additional light to pass through to the turfgrass sward. Prune lower branches to a height of six feet. On large trees, branches should be removed all the way back to the trunk or a main leader so that the area under the canopy is clear. Thinning shrubs in the landscape will improve air circulation and lower humidity. Before planting grasses, remove shallow tree feeder roots that compete with the turf for nutrients and water.

Lawn management under trees

- Avoid excessive nitrogen fertilization, which promotes shoot growth at the expense of roots, lowers carbohydrates, and promotes soft, succulent tissue that is more susceptible to disease. Shade-tolerant grasses such as the fine fescues should receive no more than 2 pounds of nitrogen per 1,000 square feet per year. Apply fertilizer in shady areas in the fall just as leaves begin to drop. Rake and remove leaves before they accumulate on turf. If fall fertilization was missed, fertilize in late winter or early spring, about a month before trees begin to leaf.
- Mow turf at 2½ to 3 inches to allow maximum interception of reduced light by the thin turfgrass sward. Avoid scalping turf. Decline of turf in shade often begins after a single episode of scalping.
- Irrigate only enough to avoid droughty soil conditions in shady locations during summer months. When moisture is needed, water infrequently and deeply. Avoid frequent irrigation that will lead to increased humidity and disease. Irrigate in the early morning to allow maximum time for drying. Do not water in the evening; turf may remain wet and ambient humidity

Table 1. Species and cultivars for shaded areas.

Environment	Common name	Species	Selected cultivars
Light to moderate shade, dry	Hard fescue	*Festuca longifolia*	Aurora, Biljart, Discovery, Ecostar, Osprey, Reliant, Reliant II, Scaldis, Spartan, Waldina, Tournament
↓	Sheep fescue	*Festuca ovina*	Bighorn, Azay
	Spreading (strong creeping) fescue	*Festuca rubra* spp. *rubra*	Flyer, Flyer II, Fortress, Ensylva, Pennlawn, Rondo, Ruby, Shademaster II
	Slender creeping fescue	*Festuca rubra* spp. *trichophylla*	Dawson
	Chewing's fescue	*Festuca rubra* spp. *commutata*	Agram, Atlanta, Banner, Banner II, Brittany, Highlight, Jamestown, Jamestown II, Koket, Shadow, Shadow II, Tiffany, Victory, Victory II, Waldorf
	Turf-type tall fescue	*Festuca arundinacea*	Apache, Adventure, Arid, Bonanza, Falcon, Falcon II, Finelawn, Houndog, Houndog V, Jaguar, Jaguar III, Lancer, Rebel, Jr., Trident
Light shade, dry*	Kentucky bluegrass	*Poa pratensis*	A-34, Able I, Absolute, Adelphi, Allure, America, Bristol, Chateau, Coventry, Enmundi, Estate, Georgetown, Glade, Huntsville, Midnight, Nugget, Princeton 105, Ram I, Unique
Light shade, wet	Perennial ryegrass	*Lolium perenne*	All Star, Birdie II, Citation II, Cowboy, Elka, Fiesta II, Gator, Manhattan II, Palmer, Palmer III, Pennant, Pennant II, Regal, Repell
Light to moderate shade, wet	Rough stalk bluegrass	*Poa trivialis*	Colt, Laser, Laser II, Saber, Saber II

Note: This list is not comprehensive, and seed of listed cultivars may be unavailable in some localities.
*Some Kentucky bluegrass cultivars will adapt to moderate shade.

may remain high throughout the night, thus increasing the chance of disease. Above all, do not overwater turf in shade. Dry conditions are always preferable to wet conditions for fescues growing in shade.

• Limit traffic. Core aerify compacted areas that receive heavy traffic.

• Avoid using herbicides in shady areas if weed problems do not exist. Many weeds, especially crabgrass, will not grow in shade.

In Missouri, the hard, sheep, and Chewing's fescues are usually preferred over the other fine fescues when using a monoculture in shady locations. Turf-type tall fescues may also provide an acceptable turf in moderate shade caused by trees.

Another shade-tolerant grass is rough stalk bluegrass. This grass does well in cool, wet conditions found in some shady locations. It performs well in the spring and fall but will die in the summer if moisture is lacking. Rough stalk bluegrass should not be used in lawns where only one or two large trees cause thinning of turf. It is a spreading grass and may escape, causing unattractive patches in sunny areas. This grass should be used in lawns only where several trees exist and other grasses have been tried without success.

Recommended seed mixtures for shade

Light to moderately shady, dry areas

- 30% to 50% Kentucky bluegrass plus 50% to 70% fine fescue (blend two or three varieties of each species and mix). Use 3 to 4 pounds of seed per 1,000 square feet.

or

- 100% turf-type tall fescue (blend two or three varieties). Use 5 to 7 pounds of seed per 1,000 square feet.

Moderately shaded, dry areas

- 100% fine fescue (blend two or three varieties within a species or mix two or three species). Use 3 to 5 pounds of seed per 1,000 square feet.

or

- 100% turf-type tall fescue (blend two or three varieties). Use 5 to 7 pounds of seed per 1,000 square feet.

Shady, wet areas

- 50% to 70% or more rough stalk bluegrass plus 30% to 50% perennial ryegrass (a blend of two or more varieties). Use 3 to 4 pounds of seed per 1,000 square feet.

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