



# Managing Turfgrass in the Shade in Oklahoma

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## Introduction

Light is a basic requirement for turfgrass growth and is often limiting in the landscape due to shade provided by trees, shrubs, buildings, homes or other structures. Photosynthetically active radiation (PAR) refers to the spectral range of solar radiation from 400 nm to 700 nm (nanometers). Plants contain chlorophyll, which absorbs light in the PAR range for photosynthesis. All turfgrasses will grow best in full-sun conditions provided their management requirements are satisfied. In shaded areas, the specific wavelengths of light available to a turfgrass plant are altered and the amount of light available can reduce the plant's ability to efficiently perform photosynthesis. Consequently, turfgrasses can be difficult to grow in shady areas, and proper management strategies are needed for success.

## Shade Removal

If possible, the best management practice for managing turfgrass in shady areas in Oklahoma is to remove the shade source. Trees and shrubs can be assessed for strategic limb and branch removal to increase the quality and/or duration of light to the turfgrass area. However, there are numerous instances where this option is not practical, especially in the case of building or house shade. Also, if there are numerous mature, tall and dense trees surrounding the area, it may not be economical or acceptable to completely remove or



Figure 1. Turfgrasses can be difficult to grow in heavily shaded areas due to poor light quality and quantity, traffic, compaction and competition with trees.

trim trees to the point where sufficient light is provided to the turfgrass area. Turfgrasses need light for adequate survival and performance, and even the most “shade tolerant” grass will not thrive in heavily shaded areas (Figure 1).

## Plant Selection

While warm-season grasses are generally more heat and drought tolerant than cool-season grasses, cool-season grasses are generally more shade tolerant than warm-season grasses (Tables 1-3). Bermudagrasses (*Cynodon* spp.) are the most commonly planted lawn grasses in Oklahoma. Bermudagrass is relatively heat and drought tolerant but has poor shade tolerance. Zoysiagrass (*Zoysia* spp.) is a heat tolerant turfgrass that will generally outperform bermudagrass in the shade. St. Augustinegrass (*Stenotaphrum secundatum*) is relatively shade tolerant among warm-season turfgrasses, but can only be grown in the southernmost Oklahoma counties due to its relatively poor freezing tolerance.

Table 1. Relative shade tolerance of selected warm- and cool-season turfgrasses for Oklahoma lawns<sup>1</sup>.

Good	Fair	Poor
Tall Fescue Kentucky Bluegrass Perennial Ryegrass St. Augustinegrass	Zoysiagrass	Bermudagrass Buffalograss

<sup>1</sup> Bermudagrass, buffalograss, zoysiagrass and St. Augustinegrass are warm-season grasses. Tall fescue, Kentucky bluegrass and perennial ryegrass are cool-season grasses.

Table 2. Relative heat tolerance of selected warm- and cool-season turfgrasses for Oklahoma lawns<sup>1</sup>.

Excellent	Good	Fair	Poor
Bermudagrass Buffalograss	Tall Fescue	Kentucky Bluegrass Perennial Ryegrass	Creeping Red Fescue
Zoysiagrass St. Augustinegrass			

<sup>1</sup> Bermudagrass, buffalograss, zoysiagrass and St. Augustinegrass are warm-season grasses. Creeping red fescue, tall fescue, Kentucky bluegrass and perennial ryegrass are cool-season grasses.

**Table 3. Relative drought tolerance of selected warm- and cool-season turfgrasses for Oklahoma lawns<sup>1</sup>.**

<i>Excellent</i>	<i>Good</i>	<i>Fair</i>
Bermudagrass	St. Augustinegrass	Perennial Ryegrass
Buffalograss Zoysiagrass	Tall Fescue Kentucky Bluegrass	

<sup>1</sup> Bermudagrass, buffalograss, zoysiagrass and St. Augustinegrass are warm-season grasses. Tall fescue, Kentucky bluegrass and perennial ryegrass are cool-season grasses.

Tall fescue (*Festuca arundinacea*) is commonly used in shady areas in Oklahoma lawns due to its superior shade tolerance compared to warm-season grasses, and its relative heat and drought tolerance when compared with other cool-season grasses. Creeping red fescue (*Festuca rubra*) shows excellent shade tolerance but does not survive well during summer heat and will often develop significant disease problems, especially in the more humid Oklahoma counties. Kentucky bluegrass (*Poa pratensis*) is not as shade tolerant as tall fescue but often has better tolerance to diseases. Perennial ryegrass (*Lolium perenne*) has good shade tolerance, but does not perform as well in Oklahoma as tall fescue and Kentucky bluegrass due to disease, heat and drought stress.

Many retail turfgrass seed bags are marketed as “shade tolerant.” These products may contain blends and/or mixes of various cool-season turfgrasses. A blend is the combination of two or more varieties within the same species such as combining two or three tall fescue varieties. A mix is a combination of two or more species such as combining tall fescue and Kentucky bluegrass. It is common to find blending and mixing used in an attempt to create shade and disease tolerant mixes. This “shotgun” approach of mixing tall fescue, Kentucky bluegrass, perennial ryegrass, and/or creeping red fescue is used so that one or more of the species will survive over time. In such mixes, the tall fescue and Kentucky bluegrass generally show best survival over time with some perennial ryegrass and very rarely creeping red fescue surviving. It is not recommended to mix cool-season turfgrass with warm-season turfgrass in shaded areas, as they have different management requirements and growth patterns.

Our general suggestions for a shade-tolerant mix are to use two or more turf-type tall fescues in combination with one or more Kentucky bluegrasses. The Kentucky bluegrasses should be present at about 5 percent to 10 percent by weight with tall fescue present at 90 percent to 95 percent by weight. Due to the very small size of Kentucky bluegrass seed as compared to tall fescue, this ratio results in somewhere near a 50/50 mix of tall fescue to Kentucky bluegrass seed count.

Once a species or mix is chosen for the shady area, make an effort to select the more shade and disease tolerant cultivars within the species, especially for warm-season grasses. There are significant cultivar shade performance differences within species among warm-season grasses (Table 4).

For more information on selecting lawn grasses in Oklahoma, see Oklahoma State University (OSU) Cooperative Extension Service (CES) Fact Sheet HLA-6418. For more information on purchasing sod in Oklahoma, see OSU CES Fact Sheet CR-6605.

**Table 4. Relative cultivar shade tolerance of bermudagrass and zoysiagrass for Oklahoma lawns<sup>1</sup>.**

	<i>Bermudagrass</i>	<i>Zoysiagrass</i>
<i>Good</i>		Cavalier, Crowne, Diamond, El Toro, Emerald, Empire, Palisades, Zorro
<i>Fair</i>	Celebration, TifGrand (Tifton No. 4, ST-5)	Meyer
<i>Poor</i>	Riviera, Princess 77, Patriot	
<i>Very Poor</i>	Common, U-3, Tifway (419), Tifsport, Tifgreen, NuMex Sahara, Yukon, Midlawn	

<sup>1</sup> Rankings are relative among selected bermudagrass and zoysiagrass cultivars only.

### Shade Management

Due to diminished light quality and/or duration, turfgrasses grown in the shade are often etiolated (thin, spindly leaves). They also have reduced shoot and root growth, low-turf density and tillering, and an overall more elongated and upright growth habit. This is believed to be due to increased production of gibberellic acid, a plant growth hormone. This can also lead to thinning of leaf cuticles (protective, waxy leaf covering), which can make the plant more susceptible to biotic and abiotic stresses such as freezing, drought, disease and insects. Shaded turf areas typically have less air movement and take longer to dry out between rain or irrigation events, contributing to increased disease pressure. Turfgrasses grown in the shade are also less traffic tolerant, causing heavily used areas to quickly thin with little to no chance of recovery. These factors often lead to constant overseeding or resodding of shady turfgrass areas, resulting in extra money, time and labor. While managing turfgrass in the shade can seem like an uphill battle, the following management tips can help to alleviate most turf problems caused by excessive shade (Figure 2).



**Figure 2. Shade-tolerant turfgrasses can be successfully grown in partial shade when proper management practices are applied.**

1. **Right plant, right place.** Select the most shade tolerant species and/or cultivar available according to site usage.

2. **Remove or selectively prune trees and shrubs** if feasible. The north side of buildings, homes and other non-moveable structures may not be conducive to turfgrass growth. Perform a sunlight site assessment by estimating the daily length of full sunlight over the area during the growing season. If the average is at least 8 hours of sunlight, bermudagrass may work; if at least 6 hours of sunlight, zoysiagrass may work; and if less than 6 hours of sunlight, then tall fescue or alternative landscape planting materials may be the best option (Table 5). Remember, trees and shrubs can be selectively pruned to improve light penetration to the lawn surface without destroying the growth habit of the plant. Remove tree limbs within 10 feet of the ground and clear brush, plants or structures that block air movement and/or sunlight. For information on proper pruning practices, see OSU CES Fact Sheet HLA-6409.

3. **Increase the mowing height** to at least 3 inches for tall fescue and other cool-season grasses and at least 2 inches for bermudagrass, zoysiagrass or St. Augustinegrass. In addition, it is likely that these areas can be mowed less frequently than full-sun areas. This would also help to reduce traffic stress to the area. If you are managing warm-season grass in the full-sun and cool-season grass in the shade, mowing equipment should be adjusted based upon recommended cutting heights by species for shady areas versus sunny areas.

4. **Fertilize lightly and frequently** as opposed to heavily and infrequently. Shaded turfgrass areas can survive with half of the nitrogen needed to maintain turfgrass in the full sun. In the shade, bermudagrass may need no more than 3 lbs of nitrogen per 1,000 sq. ft. per year. Zoysiagrass, St. Augustine or tall fescue may need no more than 2 lbs to 3 lbs of nitrogen (N) per 1,000 sq. ft. per year. If possible, apply fertilizer at the rate of 0.5 lbs N per 1,000 sq. ft. per application, making 3-4 applications over the season. For warm-season grasses, only fertilize during the warm-summer months. For cool-season grasses, only fertilize during the spring and fall. If possible, use blended fertilizers containing both a quickly available and a slow-release nitrogen fertilizer source to avoid a quick flush of growth. Always apply fertilizers based on yearly soil test results. For more information on proper soil testing procedures and analysis, see OSU CES Fact Sheets PSS-2207 and PSS-2225.

5. **Avoid excessive foot and/or equipment traffic.** Instead of mowing shady areas every time you mow full-sun areas, mow every other time. Rope-off or otherwise protect turf in shady areas, especially if laying new sod or reseeding. Try not to use heavy lawnmowers or tractors in shady areas or at least try not to repeatedly mow or drive over the same tire tracks every time.

6. **Reduce irrigation amount and frequency** when compared to full-sun areas. Shaded areas take longer to dry out than full-sun areas. If shady areas are constantly wet, there is a significant increase in the probability of disease development, especially for cool-season grasses such as tall fescue. Allow the area to sufficiently dry between waterings. If you have an automatic irrigation system, put shady turf areas on a separate zone from full-sun areas. At the same time, note that turfgrasses, trees and shrubs grown in the same immediate area compete for the same resources to survive.

Turfgrasses in the shade that are directly competing with large trees may need more frequent watering than turfgrasses under building or structural shade.

7. **Remove weeds** either by hand or with herbicides. In a home lawn situation, it may be feasible to remove weeds in shady areas by hand rather than using herbicides. Herbicides can often have a phytotoxic effect on desirable turfgrass plants. Herbicide phytotoxicity to desirable turf plants may be exacerbated by shady conditions. Also, many turfgrass herbicides can be phytotoxic to trees, shrubs or other desirable landscape plants. Always read the entire label before applying any pesticide to any part of your lawn.

8. **Remove debris and leaves**, especially in the fall and spring. Tree leaves and other debris only serve to block precious light to the turfgrass plant. Raking and removal is necessary and can often make a nice compost/mulch pile for other landscape beds. For tips on composting and mulching, see OSU CES Fact Sheets BAE-1744 and L-251.

9. **Overseed, reseed or sod.** If the turfgrass plant does not receive adequate light and/or management, yearly or bi-yearly overseeding, reseeding or sodding may be necessary. If so, follow the same basic lawn establishment instructions found in OSU CES Fact Sheet HLA-6419. For warm-season grasses, complete this task in the late spring or early summer. If using zoysiagrass in a shaded site, it will usually need to be installed as solid sod since development from seed will be extremely slow. For best results with cool-season grasses, seed or sod in the fall. If turfgrass repair in the shade is necessary, incorporate the most shade tolerant turfgrass species and cultivars.

10. **Be prepared with other planting options** if necessary. If you have tried to use tall fescue and or Kentucky bluegrass combinations, and they have repeatedly failed in the shade over a 3-year period even after selective tree pruning and modified management for shade, it is time to move to an alternative shaded landscape strategy that can include shade-tolerant ground covers, ornamentals and hardscape elements. Many other ornamental plants can be utilized in shady areas and many of these can tolerate shade much better than turfgrass plants (Table 5). Sometimes, a nicely designed ornamental bed can be more aesthetically pleasing and easier to maintain than a thinned out turfgrass area in the shade (Figure 3). Hardscape elements such as mulch, pavers and other interest elements can be welcomed additions to shaded landscapes.



Figure 3. Turfgrass alternatives can be used to create beautiful landscapes in shaded areas.

**Table 5. Alternative shade tolerant ornamental landscape plants for Oklahoma.**

**Annuals**

*Begonia* spp. – begonia  
*Caladium* spp. – caladium  
*Impatiens* spp. – sultana impatiens  
*Lobularia maritima* – sweet alyssum  
*Torenia* – wishbone flower

**Perennials**

*Acanthus mollis* – bear’s breach  
*Ajuga reptans* – carpet bugleweed  
*Anemone x hybrida* – Japanese anemone  
*Aquilegia* spp. – columbine  
*Arum italicum* ‘Pictum’ – Italian arum  
*Athyrium nipponicum* ‘Pictum’ – Japanese painted fern  
*Bletilla striata* – hardy orchid  
*Brunnera macrophyllum* – Siberian bugloss  
*Campanula* spp. – bellflower  
*Chasmanthium latifolium* – northern sea oats or wild oats  
*Dicentra spectabilis* – bleeding heart  
*Digitalis purpurea* – foxglove  
*Galium odoratum* – sweet woodruff  
*Hakonechloa macra* – hakone grass  
*Helleborus* spp. – lenten rose or hellebores  
*Heuchera sanguinea* – coral bells or alum root  
*x Heucherella* – heucherella  
*Hosta* spp. – plantain lily or hosta  
*Iris cristata* – crested iris  
*Lamium maculatum* – spotted deadnettle  
*Ligularia* spp. – ragwort  
*Liriope* spp. – liriope or monkey grass  
*Narcissus* spp. – daffodil or narcissus  
*Ophiopogon japonicus* – dwarf monkey grass  
*Paeonia hybrids* – peony  
*Paeonia suffruticosa* – tree peony  
*Polygonatum* spp. – Solomon’s seal  
*Sanguinaria canadensis* – bloodroot  
*Stylophorum diphyllum* – celandine poppy  
*Tiarella cordifolia* – foam flower  
*Tricyrtis hirta* – toadlily

**Groundcovers & Vines**

*Aegopodium podagraria* – Bishop’s weed  
*Akebia quinata* – five-leaf akebia  
*Ampelopsis brevipedunculata* – porcelain ampelopsis  
*Ardisia japonica* – Japanese ardisia  
*Clematis terniflora* – sweet autumn clematis  
*Convallaria majalis* – lily-of-the-valley  
*Euonymus fortunei* – wintercreeper euonymus

*Euphorbia cyparissius* – cypress spurge  
*Hedera helix* – English ivy  
*Hydrangea anomala* – climbing hydrangea  
*Lonicera sempervirens* – trumpet honeysuckle  
*Lysimachia nummularia* – creeping Jenny or moneywort  
*Parthenocissus tricuspidata* – Boston ivy  
*Parthenocissus quinquefolia* – Virginia creeper  
*Vinca major* – periwinkle

**Shrubs**

*Abelia x grandiflora* – glossy abelia  
*Acanthopanax sieboldianus* – five-leaf aralia  
*Aucuba* – golddust plant  
*Berberis x mentorensis* – mentor barberry  
*Berberis thunbergii* – Japanese barberry  
*Buxus* spp. – boxwood  
*Callicarpa americana* – beautyberry  
*Calycanthus floridus* – Carolina allspice  
*Camellia* spp. – camellia  
*Cephalanthus occidentalis* – buttonbush  
*Chaenomeles speciosa* – flowering quince  
*Clethra alnifolia* – sweet pepperbush  
*Cornus sericea* – redosier dogwood  
*Euonymus* spp. – euonymus  
*Fothergilla gardenii* – dwarf fothergilla  
*Hydrangea* spp. – hydrangea  
*Ilex* spp. – holly  
*Illicium floridanum* – Florida anise  
*Itea virginica* – sweetspire  
*Jasminum nudiflorum* – winter jasmine  
*Kerria japonica* – Japanese kerria  
*Ligustrum* spp. – privet  
*Mahonia* spp. – grape holly or mahonia  
*Philadelphus* spp. – mockorange  
*Nandina domestica* – nandina or heavenly bamboo  
*Pieris* – Japanese pieris  
*Pinus mugo* var. *mugo* – dwarf mugo pine  
*Prunus laurocerasus* – Otto Luyken laurel  
*Rhododendron* spp. – azalea  
*Rhodotypos scandens* – black jetbead  
*Ribes aplinum* ‘Aureum’ – golden currant  
*Spiraea x vanhouttei* – Vanhoutte spirea  
*Symphoricarpos* spp. – coralberry  
*Taxus* spp. – yew  
*Viburnum* spp. – viburnums  
*Weigela florida* – old fashioned weigela

If you have further questions about managing turfgrass in shady areas in Oklahoma, please contact your local OSU CES Extension educator.

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