

Growing Turfgrass in Shade

Aaron Patton
Assistant Professor -
Turfgrass Specialist

As much as 25 percent of lawn turf is grown in the shade. Shade can come from many sources including bushes, trees, fences and buildings. These sources reduce exposure to sunlight and also air circulation.

Photosynthesis is the process that plants use to capture energy. Photosynthesis is reduced in the shade because of a decrease in light intensity, quantity and quality, and the result is reduced turf quality. Turfgrasses grown in shade often exhibit thinned narrow leaves, reduced shoot and root growth, reduced density and tillering, reduced energy reserves and longer leaves with a more upright growth habit. Shade weakens turf so that it is more susceptible to traffic, heat, cold and drought stresses as well as certain pests.

Although shade is detrimental to turf health, there are specific species, cultivars and management practices that can be used to improve turf quality in shaded environments.

Selecting a Turfgrass for Shaded Areas

Turfgrass species and cultivars vary in their tolerance of shade (Table 1). Warm-season grasses prefer full sunlight. Bermudagrass (*Cynodon* spp.), which is the predominant lawn grass in Arkansas, unfortunately has very poor shade tolerance. Zoysiagrass (*Zoysia* spp.) and centipedegrass (*Eremochloa ophiuroides*) have fair shade tolerance, with zoysiagrass

Take-Home Points

- Turfgrass species and cultivars vary in their tolerance of shade.
- Pruning limbs, reducing fertilization, increasing the mowing height, monitoring soil moisture, interseeding, reducing traffic, removing leaves, controlling pests and applying certain plant growth regulators will help improve turf quality in shade.
- There are many ground covers and perennials better adapted to shade than turfgrasses. If plant materials are not suitable for your site or landscape design, decorative mulch and gravel are alternatives.

being adapted for use throughout Arkansas and centipedegrass limited to the southern half of Arkansas due to poor low-temperature tolerance. St. Augustinegrass (*Stenotaphrum secundatum*) has good shade tolerance and is the most shade tolerant of the warm-season grasses, but its use is also limited to the southern half of Arkansas due to poor low-temperature tolerance. Cool-season grasses have good shade tolerance and perform well in northern Arkansas in lawns receiving morning sun and some afternoon shade. Tall fescue (*Festuca arundinacea*) is well adapted for Arkansas lawns, since it is the most heat and drought tolerant of the cool-season grasses. Creeping red fescue (*Festuca rubra*), perennial ryegrass (*Lolium perenne*) and Kentucky

*Arkansas Is
Our Campus*

Visit our web site at:
<http://www.uaex.edu>

Table 1. Shade tolerance of turfgrasses grown in Arkansas.

Very Good	Good	Fair	Poor
Creeping red fescue (CS)	Tall fescue (CS)	Zoysiagrass (WS)	Bermudagrass (WS)
	Kentucky bluegrass (CS)	Centipedegrass (WS)	
	Perennial ryegrass (CS)		
	St. Augustinegrass (WS)		

CS = cool-season turfgrass; WS = warm-season turfgrass.

bluegrass (*Poa pratensis*) can persist in shade but lack heat, disease or drought tolerance and are not widely recommended for use in Arkansas.

There are differences in shade tolerance among bermudagrass and zoysiagrass cultivars. Bermudagrass typically requires at least eight hours of full sunlight each day for survival, and zoysiagrass requires at least six hours. Although bermudagrass has poor shade tolerance, the cultivars Celebration, Tift No. 4 and Transcontinental are more shade tolerant than Tifway (Tifton 419), which is the most commonly sold bermudagrass cultivar in Arkansas. Among the zoysiagrasses, Meyer is the least shade-tolerant cultivar. Several newer cultivars available in Arkansas, such as Cavalier, Crowne, Diamond, El Toro, Palisades and Zorro, perform better than Meyer in shaded environments. For more information about selecting and purchasing a turfgrass species or specific cultivar for your lawn, see *Choosing a Grass for Arkansas Lawns*, FSA2112, and *Arkansas Sod Source Directory*, FSA6136.

Management of Shaded Turf

Implementing certain management practices will help improve turf quality in shaded areas.

1. Plant *shade-tolerant species* and cultivars in shaded areas.
2. Selectively *prune tree branches* to decrease shade. Prune tree limbs within 8 feet of the ground (or the lower one-third of the tree) to allow direct sunlight to reach the turf during morning and evening hours.

3. *Fertilization* should be decreased by half for shaded turfs. Shaded turfs require less fertilization because they grow more slowly. For more information about fertilization, see *Fertilizing Your Lawn*, FSA2114. For more information about soil pH in lawns, see *Liming Your Lawn*, FSA6134.
4. Increase the *mowing* height in shaded areas in order to increase leaf area for photosynthesis. Shaded areas should be mown 0.5 to 1.0 inch higher than full-sun areas. Additionally, shaded turf grows more slowly, and these areas often do not need to be mown as frequently. For more information about mowing, see *Mowing Your Lawn*, FSA6023.
5. *Irrigation* should be monitored closely in shaded areas. In general, shaded areas stay moist and require less irrigation; however, trees can out-compete turfgrass for soil moisture in summer months causing turf to become drought stressed. Avoid late afternoon and evening watering, and instead, water deeply and infrequently during the morning hours.
6. *Interseeding* tall fescue under shade trees in bermudagrass lawns is an option for those in the northern half of Arkansas. Tall fescue seeded in September will have the best chance of establishing because it will be provided the longest exposure to direct light before the tree's deciduous foliage returns the next spring. For more information, see *Seeding a Lawn in Arkansas*, FSA2113.

Table 2. Relative shade tolerance among bermudagrass and zoysiagrass cultivars.

	Bermudagrass	Zoysiagrass
Excellent		Cavalier, Crowne, Diamond, El Toro, Palisades, Zorro
Good		Emerald
Fair	Celebration, Tift No. 4 [†] , Transcontinental [‡]	Meyer
Poor	Contessa [‡] , Veracruz [‡] , Princess 77 [‡] , Riviera [‡] , Sovereign [‡] , Southern Star [‡] , Sunbird [‡]	
Very Poor	Common [‡] , Panama [‡] , Patriot [†] , Sahara [‡] , Sunstar [‡] , Tifsport, Tifway (Tifton 419), Yukon [‡]	

[†]Not currently available in Arkansas.

[‡]Denotes a cultivar established by seed. Seed available online or by special order from local seed supply company.

7. *Leaf removal* is key to turf maintenance in the shade. Remove fallen leaves promptly in order to decrease shade on turf.
8. *Traffic tolerance* is reduced in shaded turf. Limit traffic in shaded areas in order to decrease soil compaction and improve turf quality and tree health.
9. *Weeds* can easily gain a foothold in shaded areas where there is reduced competition from turf. It may be necessary to treat with a pre-emergence or postemergence herbicide. Many herbicides are potentially damaging to trees and shrubs, so follow label directions and use with caution.
10. *Diseases* are often increased in shaded areas due to decreased air flow and increased surface moisture. Monitor these areas and use fungicides, if needed, according to label directions.
11. *Plant growth regulators* can improve the quality of turf in shaded areas. Plant growth regulators slow leaf elongation, which increases energy for root growth and storage. Primo (trinexapac-ethyl) is an effective plant growth regulator documented to improve shade tolerance of turf. Homeowners will need to hire a professional applicator for this application.

Alternative Options

There are alternative planting options if dense shade is an issue and if it is not possible or desirable to maintain turfgrass in the shade. There are many ground covers and perennials better adapted to shade than turfgrasses. Shade-tolerant ground covers adapted to certain regions in Arkansas include ajuga (*Ajuga reptans*), English ivy (*Hedera helix*), lirioppe (*Liriope muscari*), mondograss (*Ophiopogon japonicas*), pachysandra (*Pachysandra terminalis*),

bigleaf vinca (*Vinca major*) and vinca (*Vinca minor*). Shade-tolerant perennials include astilbe (*Astilbe* spp.), bleeding heart (*Dicentra spectabilis*), columbine (*Aquilegia* spp.), coral bells (*Heuchera sanguine*), hosta (*Hosta* spp.) and Lenten rose (*Helleborus orientalis*). Visit your local garden center to find out which shade-tolerant plants are best adapted to your location in Arkansas. If plant materials are not suitable for your site or landscape design, decorative mulch and gravel are alternatives.

References

1. Baldwin, C.M., H. Liu, and L.B. McCarty. 2008. Diversity of 42 bermudagrass cultivars in a reduced light environment. *Acta Hort.* (ISHS) 783:147-158.
2. Bunnell, B.T., L.B. McCarty, and W.C. Bridgers, Jr. 2005. Evaluation of three bermudagrass cultivars and Meyer Japanese zoysiagrass grown in shade. *Int. Turfgrass Soc. Res. J.* 10:826-833.
3. Ervin, E.H., C.H. Ok, B.S. Fresenburg, and J.H. Dunn. 2002. Trinexapac-ethyl restricts shoot growth and prolongs stand density of 'Meyer' zoysiagrass fairway under shade. *HortScience* 37:502-505.
4. Hanna, W., and B. Maw. 2007. Shade-resistant bermudagrass: Research has produced an improved cultivar. *USGA Green Section Record* 45(2):9-11.
5. Riffell, S.K., M.C. Engelke, and S.J. Morton. 1995. Performance of three warm-season turfgrasses cultured in shade: Zoysiagrass. *TX Turfgrass Res.* – 1995. TURF 95-11:60-65.

Additional Information

Additional fact sheets available at <http://publications.uaex.edu/>.

Additional information about turfgrass management available at <http://turf.uark.edu/>.

The information given herein is for educational purposes only. Reference to products and turfgrass cultivars is made with the understanding that no discrimination is intended nor endorsement by the Arkansas Cooperative Extension Service is implied.

Printed by University of Arkansas Cooperative Extension Service Printing Services.

DR. AARON PATTON is assistant professor - turfgrass specialist, University of Arkansas Division of Agriculture, Cooperative Extension Service, Fayetteville.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director, Cooperative Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.