

# LOUISIANA HOME LAWN SERIES

A guide to maintaining a healthy Louisiana lawn



## Shade and Warm-Season Turfgrasses

Many home landscapes have some shaded turfgrass because of large trees or fences, buildings or other structures. While some turfgrass species can survive in partial shade, too much shade negatively affects turfgrass growth because it limits photosynthesis, the process by which leaves convert sunlight into chemical energy. All warm-season turfgrass species grow best in full sunlight, but some species can tolerate partial shade. Understanding how shade affects plant growth will allow you to better select and manage tolerant turfgrass species. Sometimes, in heavily shaded conditions, alternative plantings or landscape features are more suitable solutions.

### The Basics of Shade

An environment with no light will not allow plants to survive because light is necessary for photosynthesis. However, depending on the environment, partially shaded areas can be suitable for growing shade-tolerant, warm-season turfgrass species. Factors that determine whether a site is suitable for turfgrass growth include:

**Light intensity:** This refers to the amount of light energy per area. Think of light intensity as the brightness of the light. Light photons travel at various wavelengths. Types of wavelengths differ in amounts of energy. Cloud cover, trees or other factors can affect light intensity.

**Light duration:** This term is used to quantify the time a turfgrass is exposed to light. This could be the hours of full or partially lighted conditions. Although it can vary with season and turfgrass species, most turfgrasses need four to six hours of full sunlight or longer for partially shaded areas to grow properly.

**Light quality:** This describes the composition of the light. Remember that light from the sun contains many different wavelengths, and only certain wavelengths are needed for photosynthesis. Light quality can differ depending on what is shading the turfgrass. For instance, turfgrass growing in shade from a tree is exposed to more red light. The tree is using many of the necessary wavelengths for photosynthesis for its own growth. As a result, more wavelengths of far-red light reach the turfgrass growing underneath, resulting in turfgrass growing taller but not denser.



*Live oak tree*

# Turfgrass Response to Shade

- Slower growth
- Thinner leaf blades
- Increased vertical turfgrass growth
- Reduced sward density
- Longer internodes on stolons
- Shallower rooting
- More succulent tissue
- Reduced photosynthetic rate
- Lower energy reserves
- Decline in overall quality

Most turfgrass species will decline over time if the area does not get enough hours of full or partial sunlight. Groupings of trees or tree species such as live oaks that have spreading branches can result in extremely shaded conditions. If very few plants or weeds are growing in the area, this is a sign that not enough light is available. If turfgrass is often planted in a shaded area, over time the turfgrass will grow taller and the canopy will thin. Other environmental factors, such as poor air movement, leads to higher humidity and greater disease and insect incidence. If pests injure the turfgrass, the lack of sunlight — and, as a result, the lack of photosynthesis — does not allow the turfgrass to recover.

Depending on the species, trees may be pruned to allow greater light penetration. However, be aware that such maintenance can also positively affect tree growth and result in denser shade over time.



*Bermudagrass lawn response to live oak tree shade*

# Turfgrass Shade Tolerance

St. Augustinegrass is considered the most shade-tolerant warm-season turfgrass, followed by zoysiagrass and centipedegrass. Bermudagrass has very poor shade tolerance. Also, shade tolerance can vary by cultivar for each species. These designation of shade tolerance are relative to the most popular turfgrass species used in home lawns in Louisiana. Before installing a warm-season turfgrass in a shaded area, consult your local LSU AgCenter extension agent to determine which cultivars are best suited for your lawn.

Turfgrass Species	Shade Tolerance
Bermudagrass	Poor
Centipedegrass	Medium
St. Augustinegrass	Medium to Excellent
Zoysiagrass	Medium to Excellent

# Turfgrass Maintenance in Shade

**Irrigation:** Irrigation frequency will depend on environmental conditions. If shade is caused by trees, the turfgrass and trees compete for available soil moisture. However, shade from structures can lead to higher soil moisture than non-shaded areas. Check shaded areas routinely to determine irrigation needs. Irrigate deeply and less frequently. This will encourage deeper rooting by the turfgrass. Be sure not to irrigate to a point of surface runoff and take rainfall into account when scheduling irrigation.

**Nitrogen Fertilization:** Turfgrass growing in shaded areas should be fertilized at lower rates of nitrogen and less frequently because reduced light limits photosynthesis and plant vigor. Apply nitrogen at rates up to 0.5 pounds of nitrogen per 1,000 square feet per application. Be careful not to overfertilize the turfgrass with nitrogen because this can lead the turfgrass to grow more vertically and exhaust stored energy and potentially increase pest pressure. Fertilize only when the turfgrass is actively growing. Follow soil test recommendations for proper fertility of other macro- and micronutrients and consider fertilizing trees separately from the turfgrass.

**Mowing and Traffic:** In shaded environments it is best to limit traffic across the area to prevent turfgrass stress. Turfgrass growing in shade should be mowed at a slightly higher height than nonshaded turfgrass to increase leaf area for greater light interception. The adjacent table gives the recommended mowing heights of turfgrasses growing in nonshaded environments. Make sure the soil is not saturated so that a mower does not form ruts, compact the soil, or damage tree roots. Follow the recommended mowing height per species. Never remove more than one-third of the leaf blade at one mowing. Mowing at the appropriate height and frequency is key to having a healthy turfgrass, preventing scalping and reducing weed encroachment.

Turfgrass Species	Mowing Height
Bermudagrass	1 - 2 inches
Centipedegrass	1 - 2.5 inches
St. Augustinegrass	2.5 - 3 inches
Zoysiagrass	1 - 2.5 inches

## Alternative Plantings and Landscape Features

Sometimes turfgrass does not grow well in a shaded environment. In Louisiana, plant species such as liriopé (*Liriope muscari*), Asiatic jasmine (*Trachelospermum asiaticum*) or holly fern (*Cyrtomium falcatum*) can provide alternative groundcovers in shaded environments. For more information regarding ground covers in Louisiana please refer to publication No. 2614, Ground Covers and Vines for Louisiana Landscapes. In some situations, no plant species will provide a suitable alternative to turfgrass. If bare ground is not acceptable, the area can be mulched with wood chips, pine straw or other mulching products. Mulching helps prevent weeds, retain moisture, and reduce erosion.



*Liriope planting in shaded area*



*Wood chip mulch in shaded area*

**Authors:**

Jeffrey Beasley, Associate Professor, School of Plant, Environmental and Soil Sciences; Kayla Sanders, Extension Associate, School of Plant, Environmental and Soil Sciences

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William B. Richardson, LSU Vice President for Agriculture  
Louisiana State University Agricultural Center, Louisiana Agricultural Experiment Station, Louisiana Cooperative Extension Service, LSU College of Agriculture  
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