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ST. AUGUSTINEGRASS LAWN MANAGEMENT

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St. Augustinegrass

Scientific Name: *Stenotaphrum secundatum* (Walter) Kuntze

Description: St. Augustinegrass is a coarse-textured, stoloniferous grass widely grown in the state of Texas and throughout the southern United States. In general, St. Augustinegrass is considered to be the most shade-tolerant warm-season grass. It typically grows best in warm temperatures ranging from 80 to 95°F and will become brown or off-colored during winter dormancy. St. Augustinegrass is established vegetatively using sod, sprigs, and plugs. Currently, seed is not available.

Strengths: Shade tolerance, moderate drought tolerance, deep rooting potential, and rapid establishment rate.

Weaknesses: Many cultivars do not tolerate colder weather and traffic as well as some other warm-season turfgrasses. St. Augustinegrass is susceptible to diseases such as large patch (*Rhizoctonia solani*), gray leaf spot (*Pyricularia grisea*), and take-all root rot (*Gaeumannomyces graminis* var. *graminis*). Susceptibility can be significantly influenced by management practices, such as irrigation, fertilization. It is also susceptible to chinch bugs (*Blissus leucopterus*).

St. Augustinegrass Shade Tolerance

Warm-season turfgrasses offer fewer shade-tolerant options compared with their cool-season counterparts. St. Augustinegrass thrives in full sun, but some species and cultivars can survive in partial to moderate shade.

St. Augustinegrass is generally considered the most shade-tolerant warm-season turfgrass but will still require a daily minimum of 4 to 6 hours of light to survive. Shade tolerance will vary across St. Augustinegrass cultivars and will be further influenced by the nature of shade, such as filtered light versus structural shade from buildings and other environmental conditions. In general, warm-season turfgrasses respond favorably to afternoon light compared to morning light. Warm-season turfgrass may not be able to survive in heavily shaded areas, particularly under growing trees with increasingly dense canopies. Under these circumstances, you may want to consider alternatives, including mulch or shade-tolerant perennial plantings. **For more information on alternative planting options for shade, please see** Shade Gardening for North Texas.

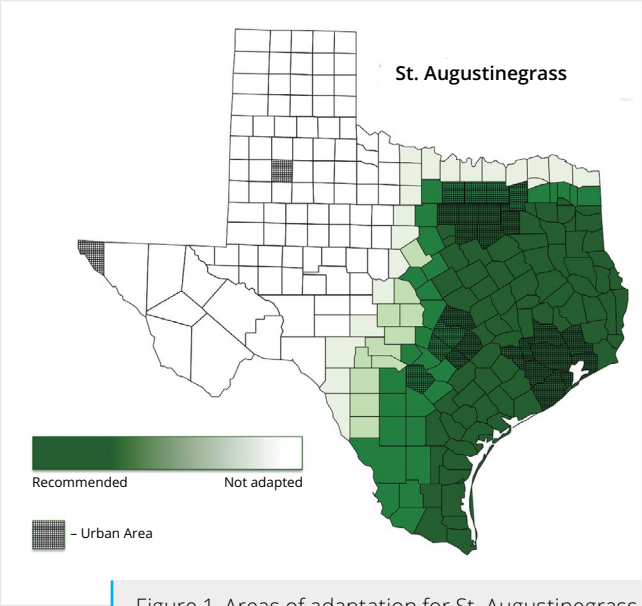

Figure 1. Areas of adaptation for St. Augustinegrass.

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Establishment

Best establishment guidelines are that warm-season turfgrasses be planted during warmer months when they are actively growing to promote quick and successful establishment. Ideally, St. Augustinegrass should be planted in the late spring and early summer to avoid temperature extremes. This time of year will also often offer greater natural precipitation to aid in establishment compared with drier months in the late summer. While St. Augustinegrass sod can be planted year-round in many parts of Texas, it is important to be mindful of how environmental conditions during other parts of the year may influence the success of establishment. Allow as much time as possible for turfgrass roots to develop prior to fall and winter frosts. St. Augustine is susceptible to winter-kill in some parts of Texas, and successful establishment is vital for winter survival.

Figure 2. Winter-kill differences in St. Augustinegrass.
Credit: Susana Milla-Lewis, Ph.D.

St. Augustinegrass is currently established by vegetative means, which includes sod, sprigs, or plugs, as seed is not currently available. St. Augustinegrass has a stoloniferous (above-ground stems) growth habit, which means it has the capability to spread laterally to create new root and shoot growth. It is important to note that St. Augustinegrass does not produce rhizomes (below-ground stems) like bermudagrass or zoysiagrass. This can be important to consider when determining appropriate cultivation practices, as significant above-ground injury can have greater consequences to overall plant health.

Mowing

Proper mowing is vital to the prolonged health of your turfgrass lawn. The objective when mowing turfgrass is to encourage dense lateral growth without removing excess above-ground vegetation. This is achieved by mowing at the appropriate height and frequency using a well-maintained mower. This section provides a general overview of appropriate mowing practices for St. Augustinegrass lawns.

Mowing Height

St. Augustinegrass lawns are generally best maintained at a mowing height of between **2 and 4 inches.** Shorter mowing heights will require more frequent mowing to prevent scalping or injury to your turfgrass lawn. Mowing height may be determined by your cultivar and your mower's capability. For St. Augustinegrass, it is recommended for homeowners to set their mower at either the highest height of cut or one step below to allow for some flexibility. A taller mowing height will also offer several benefits, including shading out of weeds, deeper rooting, and improved water infiltration. Taller mowing heights are also recommended for St. Augustinegrass in moderate shade to increase leaf surface area and photosynthesis potential. Maintaining sharp mower blades is recommended for a better quality of cut as well as to limit stress and disease pressure.

Mowing Frequency

Mowing frequency is primarily determined by the rate of growth and the 1/3 Rule. Ideally, you should avoid removing more than one third of the total green canopy height at any one time. For example, if your optimum mowing height is 2 inches, then you should strive to mow before or by the time the grass reaches 3 inches in height. This prevents scalping and excessive injury that will compromise the overall health and appearance of the turfgrass. Furthermore, frequent scalping will increase the likelihood of weed encroachment by exposing the soil to sunlight that promotes weed emergence and growth. Your mowing frequency will likely fluctuate throughout the year in response to changes in environmental conditions that affect turfgrass growth, such as light, temperature, and precipitation, as well as water and fertilizer inputs.

Other Mowing Recommendations

Keep mower blades sharp and clean between mowings to prevent the spread of turfgrass pests such as disease and chinch bugs.

Because turfgrass clippings are rich with nutrients, it is often desirable to mulch clippings or return them to the turfgrass, provided that clippings are fine and evenly distributed across the area. Avoid returning clippings during times of active disease and when weeds are flowering.

Avoid operating heavy riding mowers on turfgrass when the soil is wet, as this can lead to ruts and soil compaction.

For more information on proper mowing habits, please see Mowing Recommendations for Warm-Season Turfgrasses.

Fertilization

A balanced fertilization program is important for developing and sustaining a healthy lawn. All turfgrasses require essential nutrients for proper growth, and while some of these mineral nutrients can be acquired through the soil, air, and water, supplemental applications of nutrients are often necessary to meet requirements.

The first step in determining fertilizer needs is to take a soil test. This can be performed every 1 to 3 years to monitor changes in your soil over time. Your local AgriLife County Extension office will offer sampling bags, instructions, and shipping information for collecting your soil samples. Additional information can also be found by visiting the Soil, Water and Forage Testing Laboratory at *http://soiltesting.tamu.edu/.* In order to be the most efficient with your nutrient management program, all nutrients should be applied based on your soil test results with the exception of nitrogen (N), which can generally be applied based on the soil type, cultivar, and desired response. Soil tests can also reveal other useful information, such as pH, which will affect nutrient availability. When you have questions about what your soil test means, you can contact your AgriLife County Extension Agent or the Texas A&M AgriLife Soil, Water and Forage Testing Laboratory.

Nitrogen

Nitrogen needs for St. Augustinegrass can be met by applying between **1 and 4 pounds of N per 1000 square feet** annually. These rates will vary according to the length of the growing season, soil type, and cultivar. Fertilizer should be applied when turfgrass is actively growing and able to take up and utilize the applied nutrients. Because of this, it is recommended that the first fertilizer application is made once the turfgrass has been mowed at least twice in the spring, as this indicates new growth. The final application of N should typically go out at least 4 to 6 weeks prior to the historic first frost date for your county in order to prevent over-application in the fall, which can lead to increased winter kill and disease.

Follow product recommendations for appropriate application rates. Most quick-release N sources, such as nitrate and urea, should be applied at rates of no more than 1 pound of N per 1000 square feet in a single application. Applying at a reduced rate of 0.5 pound N per 1000 square feet may prevent burning or injury to the turfgrass. Slow-release products may have alternative recommendations and can often be applied at a higher rate than soluble quick-release products. Follow label recommendations.

Iron

St. Augustinegrass is very sensitive to iron deficiency and often develops chlorotic symptoms in alkaline (pH > 7.5) soils or iron-deficient soils. If desired, this can be corrected with foliar applications of iron sulfate or iron chelate. Soil applications of a granular iron amendment are less effective in alkaline soils, as the iron may become quickly bound up and unavailable for plant uptake. The application of high-quality compost materials may also be beneficial in introducing micronutrients to your turfgrass system.

Irrigation

Current commercially available St. Augustinegrass is not as drought tolerant as some other warm-season turfgrass species such as bermudagrass (*Cynodon spp.*) or buffalograss (*Bouteloua dactyloides*). Therefore, more supplemental irrigation may be required throughout the growing season to maintain turfgrass health. Many warm-season turfgrasses are drought adapted and can survive summer dormancy for long periods. Summer dormancy is a normal response to heat and drought stress. If allowed to enter summer dormancy, appearance and performance may decline. Summer irrigation can prevent excessive heat and drought stress.

It is generally recommended that established turfgrass areas be watered **deeply and infrequently** to promote the development of deep and healthy roots. To implement this practice, you will generally not need to irrigate established turfgrass more than **one to two times per week** during warmer months of the year. During rainy periods, you may not need to provide supplemental irrigation at all. One way to schedule irrigation is by inspecting the turfgrass for wilting leaves and a blue-gray color throughout the lawn. These are good indicators of drought stress. Irrigation can then be used to relieve this stress, and then repeated when drought stress reoccurs. After the first days or weeks of the growing season, it will become apparent how often the irrigation system should be set to prevent drought stress. Adjustments should be made during weeks when precipitation is sufficient to meet partial or total water requirements.

During transition seasons like spring and fall, automated irrigation can be turned off in favor of manual watering on an as-needed basis. During this time, warm-season grasses may be dormant, which, combined with cooler temperatures, reduced growth, and natural rainfall, no supplemental irrigation may be needed to meet their evapotranspiration (ET) needs. Excessive watering during these seasons can be wasteful and can increase susceptibility to select turfgrass diseases such as large patch. Water should be turned off in winter months when

turfgrass is not actively growing. Some exceptions to this reduction include southern parts of Texas where warm-season turfgrasses do not go fully dormant, in sandy soils that are well-drained, or in newly planted turfgrass.

Irrigation Auditing

Irrigation audits play a critical role in implementing an effective watering program. Audits are able to provide two critical pieces of information:

1. The precipitation rate of the system (inches of water per unit of time)
2. Irrigation system uniformity (gaps in coverage, broken/malfunctioning equipment)

One way to perform an audit is to hire a licensed landscape irrigation auditor to evaluate your irrigation system. Another approach is to perform a "catch-can test" by placing a series of straight-sided containers throughout the lawn and setting the irrigation system to run for a predetermined amount of time. You can use Aggie Catch Cans, graduated cylinders, tuna cans, etc., and then use a ruler to measure how much water is in each container. This information will help you determine how to schedule your system. For example, if you catch an average of 0.25 inches of water in 15 minutes, scheduling your system to run for 15 minutes 2 times per week will deliver approximately 0.5 inches of water per week. For more information, including an instructional video, on how to perform an irrigation audit, visit *https://irrigation.tamu.edu/.*

Other Irrigation Recommendations

- Early morning (3 a.m. to 9 a.m.) watering is recommended as the most appropriate time of day to irrigate. Midday watering will increase evaporative losses, and evening watering can prolong the period of leaf wetness and create conditions that promote disease. Always follow municipal ordinances.
- Cycle and soak irrigation is a method that can be utilized to improve water infiltration on heavy soil when irrigating by "pulsing" water in more gradually. When programming irrigation, each station could be watered using two to three short cycles instead of one long cycle by setting several start times. Using this method can help reduce wasteful runoff.

Cultivation

Cultivation may be required on an as-needed basis to primarily address two common turfgrass problems: soil compaction and excess thatch accumulation. **Compaction** occurs when soils become extremely compressed, limiting the amount of pore space—which is filled with air and water. Compacted soils have poor water infiltration and can inhibit root growth. **Thatch** is generally defined as the intermingling of living (roots, rhizomes, and stolons) and dead material between turfgrass roots and shoots. Excess thatch greater than 0.5 inches in thickness can lead to issues with water movement to the roots, as well as an increase in turfgrass pest activity. Excessive thatch build-up can also give the turfgrass a "puffy" texture that is not always desirable and can lead to increased risk of scalping and mowing injury in some species.

There are several cultivation practices utilized to maintain turfgrass. It is important to remember that these practices are mechanically disruptive and inflict temporary injury onto your turf. For best results, these practices should be implemented in the spring and early summer months when turfgrass is actively growing and able to recover quickly. Adequate irrigation and fertilization following cultivation can also help to ensure a more rapid recovery.

When cultivating your St. Augustinegrass lawn, it is important to remember that this species produces stolons (above-ground stems), but does not produce rhizomes (below-ground stems) like bermudagrass and zoysiagrass. This means that significant injury of the above-ground tissue can have a more lasting impact on the overall health of this species compared with those that have additional structures to support recovery. For this reason, it is generally not recommended to use spring scalping as a primary cultivation practice for removing thatch and debris on St. Augustinegrass lawns. If you choose to scalp, proceed with caution, and experiment with an appropriate depth in a smaller, less visible area to ensure your turfgrass is able to tolerate this practice.

Verticutting or Vertical Mowing

This practice is used to slice into turfgrass vertically to remove thatch and other debris. Depending on the size of the area and the extent of thatch accumulation, this process can be fairly labor intensive. Because St. Augustinegrass is coarser than some other warm-season turfgrass species, blades should be spaced at least 3 inches apart. Furthermore, it is important to use sharp equipment and proceed with caution to ensure turf is not snagged and uprooted. Once you have finished verticutting, you will want to remove as much of the debris as possible. Sometimes, this is best achieved with the use of a pitchfork and a wheelbarrow. Verticutting is primarily used for dethatching, but can sometimes be utilized to stimulate new growth in areas that are thin or worn. The vertical slicing through the stolons generates new growth. Following verticutting with a light topdressing can be beneficial as well. Some cultivation practices, such as aerification, offer an added benefit of alleviating soil

compaction. However, verticutting generally does not penetrate deeply enough in the soil to have a significant effect on compacted soils.

Aerification

Aerification is another type of cultivation practice. There are several types of aerifiers, and they impact turfgrass in different ways. In general, aerification is performed to create channels in the root zone that increase air and water movement and create space for root expansion. This practice can be combined with the application of fertilizers, topdressing material, or compost to incorporate these products into the root zone. Aerification is going to be the primary practice utilized to alleviate **soil compaction** in turfgrass systems.

Core aerification, or the removal of plugs, can sometimes offer more benefit when alleviating compaction—particularly in soils with a higher clay content. Core aerifiers also aid in the removal of thatch but are still only impacting 1 to 3 percent of the surface in 1 aerification event. Solid-tine aerification may not be as beneficial on clay soils as it is on sandier soils. Aerifiers can penetrate anywhere from 1 to 16 inches into the soil, depending on the device and the type of tines. Most core aerifiers available for rent will go to a depth of approximately 3 to 4 inches. This is a sufficient depth for alleviating some compaction.

Other Cultivation Recommendations

- Be mindful of irrigation lines and heads.
- Be mindful of caliche rocks that may break or damage equipment.
- Avoid cultivation practices during extreme weather conditions such as frosts, high heat, and drought.

Pest Management

Like all turfgrass species, St. Augustinegrass is susceptible to disease and insect damage. The severity and susceptibility to pest damage are cultivar dependent. The most common diseases observed on St. Augustinegrass are gray leaf spot (*Pyricularia grisea*), large patch (*Rhizoctonia solani*), and take-all root rot (*Gaeumannomyces graminis* var. *graminis*), while the most common insect pests are chinch bugs and white grubs. Disease and insect damage can often look very similar. This is why it is important to monitor areas and scout for pests to properly identify and treat the problem. At times, pests can coexist. If this is the case, treating both pests at the same time is recommended. Pesticide resistance management is encouraged by rotating the site of action of the pesticide used. Repeated use of products with the same site of action will result in resistance build-up. It is recommended to never use the same site of action more than three times in a row.

Gray Leaf Spot – *Pyricularia grisea*

Gray leaf spot is a summer disease that can develop rapidly following prolonged periods of warm, wet conditions. Lush growth following heavy N applications or new establishment is particularly susceptible. Symptoms include tan or gray oblong lesions with purple to brown margins that can result in withering of large areas if severe. Gray leaf spot spreads by airborne spores and may have no distinct patches. When the disease is present, it is recommended that turfgrass clippings are bagged and removed to prevent it from spreading. Regular mowing can also help to remove susceptible new growth and keep the canopy open and airy. Generally, chemical control (fungicides) are not necessary to treat gray leaf spot in home lawns. Cultural management includes balancing fertility, avoiding high rates of soluble N, and deep and infrequent irrigation.

Figure 3. Gray leaf spot. *Credit: NC State Extension*

Large Patch – *Rhizoctonia solani* – AG-2-2LP

Large patch is a fall and spring disease that forms circular patterns with yellow to orange outer borders. Large patch attacks the lower crown and leaf sheath area of the plant. Diseased shoots pull easily from the sheath, which is a field diagnostic of the disease. During active disease periods, pathogens can be readily moved on equipment. Proper sanitation practices are vital during active periods. Mowing is discouraged until disease activity is halted. Cultural management includes promoting proper drainage, deep and infrequent irrigation, thatch removal, and balancing fertility. Fungicides labeled for the control of large patch disease can be used when soil temperatures are in the 50 to 70°F range, especially in areas that have

Figure 4. Large patch on St. Augustine.
Credit: Texas A&M AgriLife Extnesion

had chronic disease pressure. Typically, fungicides will be the most effective when applied preventatively in the fall before disease symptoms are visible.

Take-All Root Rot – *Gaeumannomyces graminis*

Take-all root rot is a fungal disease that lives in the soil. With a soil-borne pathogen, cultural practices are the most important aspect for management. Disease activity can be seen throughout the year if turfgrass is stressed but is most prominent when turfgrass is coming out of dormancy in the spring and early summer. Symptoms first appear as chlorotic leaves that eventually turn brown and wilt. As the disease progresses, turfgrass will thin out, leaving brown, irregular-shaped patches that can range from 1 to 20 feet in diameter. Roots of infected grass are usually short, blackened, and rotten; this makes it very easy to lift stolons from the soil. Weakened roots make plants more prone to drought stress. During active disease periods, this fungus usually does not easily transmit on equipment, but limiting the spread of infected plant parts is a good practice. Take-all root rot is more likely to develop under alkaline soil conditions (pH >7). Cultural management includes promoting proper drainage, deep and infrequent irrigation, balancing fertility, and acidifying the soil. Acidifying amendments such as compost, peat moss, and select sulfur-containing amendments can be used independently or when performing cultural practices, such as aerification, to temporarily lower the soil pH to favor turfgrass recovery.

Figure 5. Take-all root rot on St. Augustine.
Credit: Texas A&M AgriLife Extension

Chinch Bugs – *Blissus leucopterus*

Chinch bugs are a common pest of St. Augustinegrass and range in size from approximately 0.2 to 3 millimeters. Chinch bugs are most commonly seen in the summer when the weather is hot and dry. Although all life stages of chinch bugs can be found in the thatch layer, nymphs do damage to the grass by feeding on plant sap and potentially injecting a toxin that will ultimately result in plant tissue death. If this is left untreated, damage can be quite severe and cause large irregular patches of yellow to dead turfgrass. These symptoms can easily be mistaken for drought stress or other disease symptoms. While there is no preventative chemical control of chinch bugs, preventing significant damage is possible with scouting and monitoring for chinch bugs. This can be done by pulling back areas of the turfgrass canopy close to a driveway or damaged area and inserting a 6-inch-diameter coffee can 2 inches into the ground, filling it with water, and watching the insects float to the top. The treatment threshold for chinch bugs is 25 bugs per square foot.

Figure 6. Chinch bug damage on St. Augustine.
Credit: Texas A&M AgriLife Extension

White Grubs – *Phyllophaga crinite, Phyllophaga congrua, Cyclocephala lurida*

White grubs, the larval stage of a scarab beetle (May/June beetles or chafers), are a common turfgrass pest that can feed on the roots of St. Augustinegrass. Symptoms include irregular patches of dead turfgrass, root damage, and possible secondary damage from skunks, armadillos, etc., from digging for grubs. While not all white grubs damage turfgrass, the May/June beetle and the southern masked chafer are the key damaging species. Depending on where you are in the state, these damaging species will emerge from late May in South Texas to July in North Texas to mate and lay eggs. In sites prone to white grub damage, preventative chemical treatments are suggested in June in South Texas and July in North Texas. The treatment

threshold for white grubs is 5 to 10 grubs per square foot. Therefore, treatment for white grubs is not appropriate in all sites. Depending on the time of year, multiple types of chemical treatments may be appropriate. These include preventative, curative (grubs present but no damage), and rescue (damage present).

Figure 7. White grubs in St. Augustine.
Credit: Texas A&M AgriLife Extension

ST. AUGUSTINE COMMON COMMERCIALLY AVAILABLE CULTIVARS

*For more information about cultivars available at Texas Sod Farms, please visit *www.texasgrass.com**

Amerishade

Amerishade® has a semi-dwarf growing habit featuring smaller blades and shorter internode lengths than other cultivars of St. Augustine. Amerishade has a dark-green color with a medium texture and is the most shade-tolerant St. Augustinegrass available on the commercial market. However, Amerishade has been found to be highly susceptible to disease.

CitraBlue

CitraBlue™ has a distinctive blue-green color with very good disease resistance to gray leaf spot, good large patch resistance, and good take-all root rot resistance thus far. CitraBlue creates a dense, compacted canopy with good drought and cold tolerance and has shown excellent shade tolerance in trials. CitraBlue has a prostrate growth habit that is prone to produce thatch, but this can easily be managed through cultural practices.

Texas Common

According to Texas sod growers, Texas Common has been grown and produced since the 1920s. This St. Augustine may exhibit multiple characteristics. Texas Common has been vegetatively propagated thoroughly over the years and can be found in natural variations across the state.

DelMar

DelMar® has a dwarf growing habit with short internodes and a dark-green color. DelMar has greater cold tolerance and shade tolerance than some other St. Augustinegrass cultivars but is susceptible to chinch bugs and large patch disease. Dwarf cultivars of St. Augustinegrass generally produce heavier thatch, but this can easily be managed through cultural practices.

Floratam

Floratam is a coarse-textured cultivar that has poor cold and shade tolerance compared to other cultivars grown in Texas but good resistance to large patch disease and drought. Floratam will need at least 6 hours of direct sunlight daily to grow consistently. Floratam is not tolerant to herbicides containing the active ingredient Atrazine and will be injured. Initially, Floratam was resistant to chinch bugs, but over the years, the resistance has been lost.

Palmetto

Palmetto® is a semi-dwarf grass with a light-green color. Palmetto is less prone to thatch than true dwarf cultivars. It has good shade tolerance, needing approximately 5 hours of direct sun when established properly but will not endure in dense shade. It is susceptible to insects and moderately to disease, especially in a humid climate. Palmetto does not exhibit as much cold tolerance as Raleigh.

Raleigh

Raleigh is a coarse-textured grass with a medium-green color. Raleigh has excellent cold tolerance and good shade tolerance but is susceptible to disease and insect damage. Raleigh needs approximately 5 to 6 hours of direct sunlight a day to grow consistently. During the high summer heat, Raleigh may yellow and be less aggressive than in the cooler temperatures.

For access to Aggie Turf Factsheets, please visit *www.aggieturf.tamu.edu*