



Summer Lawn Management: Watering the Lawn

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Why Water the Lawn?

Water makes up 75 to 85 percent of the weight of a healthy grass plant. It is essential for seed germination, tissue formation, plant cooling, food manufacture, and nutrient absorption and transport. A grass plant loses the most water under conditions of high light intensity, high temperature, low relative humidity, and windy conditions. Without adequate water, the grass plant can't cool itself and becomes susceptible to wilting, desiccation, and death.

Are Some Grasses More Drought-Tolerant?

Yes, grasses differ in both their need for water and their drought tolerance. As a rule of thumb, warm-season grasses (bermudagrass, zoysiagrass, centipedegrass, and St. Augustinegrass) are much more efficient water users than are cool-season grasses (tall fescue, Kentucky bluegrass, fine leaf fescues, perennial ryegrass). When properly managed, tall fescue develops a deep root system and can be very drought-tolerant. However, this advantage is lost if grown on shallow or extremely compacted soils.

Kentucky bluegrass can survive extended drought periods by gradually slowing growth, turning straw colored, and entering summer dormancy. Once water becomes available again, it can initiate new growth from the crown of each plant. Perennial ryegrasses have little tolerance for dry conditions and usually do not persist well in nonirrigated areas. Fine fescues such as creeping red, chewings fescue, and hard fescue tolerate dry periods quite well due to their low water requirements. The physiology of warm-season grasses means they prefer warm conditions and can tolerate most drought

conditions due to their deep and extensive root systems. However, the most drought-tolerant grasses may not be suitable for all regions of Virginia. Consult your local Extension office (www.ext.vt.edu/offices) for specific information for the best grasses for your area.

Also, consider the age of your turf. Seedling or recently established lawns (less than a year old) have little to no drought tolerance. Consider the proper planting time for the various grasses in order to successfully establish a lawn. Establishing grasses at the appropriate time optimizes the development of their root systems and reduces supplemental irrigation needs.

- Cool-season grasses are ideally established in the late summer to early fall; the secondary time for planting is spring.
- Warm-season grasses are ideally established in late spring to mid-summer.

How Much Water Does My Lawn Need?

This varies somewhat depending on grass type, climate, and soil conditions. In general, a rule of thumb is that most turfgrasses require approximately 1 inch of water per week — whether from rainfall or supplemental irrigation — to sustain growth during warmer conditions. Remember that warm-season grasses have a large competitive advantage over cool-season grasses regarding water use efficiency during the summer months. Use a rain gauge to keep track of rainfall and perform basic audits of your irrigation system (described in the *What About Sprinklers?* section that follows) by capturing water for a known period of time using small containers placed on the lawn. Remember that if nature provides

water by rainfall, irrigation may not be needed. Pay attention to current weather conditions and forecasts in order to use water more responsibly. Nothing is more wasteful (and more likely to attract negative attention) than seeing irrigation running in the rain!



Irrigation during a rainfall event wastes water and suggests the irrigation system and turf are not being properly monitored.

What About Too Much or Too Little Water?

Overwatered lawns frequently lead to excess blade growth, summer fungal diseases, and more frequent mowing. Excessive watering also wastes water and increases the risk of fertilizer and pesticide runoff from the lawn to paved surfaces. This could negatively impact local water quality. Lawns that receive little to no water from irrigation or rainfall during summer months will go dormant. Grass blade coloring will lighten. Most lawns will recover when water returns.



Turfgrasses enter dormancy during severe drought as a survival mechanism.

During an extreme and persistent drought, it is possible that some cool-season grasses may die and require reseeding in the fall. This may be acceptable to those looking to conserve water during summer months or may be necessary because of water use restrictions during a drought. Again, where warm-season grasses are adapted within the state, consider using them because they can better withstand most drought conditions. Researchers at Virginia Tech continue to evaluate a new generation of “water-saver” grasses, and drought tolerance is part of the selection criteria used in developing the annual Virginia Turfgrass Variety Recommendations list that can be found on the Virginia Cooperative Extension website (www.pubs.ext.vt.edu).



This portion of a Kentucky bluegrass/perennial ryegrass lawn on a very shallow soil has entered summer dormancy due to drought.



Following one-half inch of rain, there is a dramatic recovery in color and growth of the bluegrass/ryegrass lawn over a one-week period.

How Can I Tell if My Lawn Needs Water?

A thirsty lawn initially shows signs of “footprinting.” In these areas, the grass blades will not spring back if you walk across the lawn, and your footprints will be visible. This is the first sign of wilt and indicates a need for water. The lawn turns from the normal green to a bluish-purple color.



A sign of extreme moisture stress on a lawn is “footprinting” — when the turfgrass leaves do not spring back after walking on the lawn.

Tips for Better Watering

- Deep and infrequent watering that thoroughly soaks the rootzone to a 4-inch depth maintains a healthy root system and reduces weed infestation (as opposed to light and frequent irrigation, which promotes shallow roots and germination of weed seeds).
 - Effectively applying 1 inch of water is likely impossible to do in a single watering given the slow infiltration rate of most Virginia soils. Therefore, smaller amounts of water applied every three to four days may be required to allow water to enter the soil without causing runoff.
- Water is best applied early in the morning — a few hours before or just after sunrise — when evaporation loss and the impact of wind are lowest. This is fairly easy to accomplish with computerized, programmable timers but can be done with relatively inexpensive timers that are attached to hoses for aboveground sprinkler systems. One possible issue with the early morning irrigation timing is the demands placed on a community’s water system if a large number of households irrigate at the same time.



Timers with varying functions at a range of prices are available to improve irrigation efficiency of both inground and aboveground irrigation systems.

Afternoon watering is acceptable, but wind may affect uniformity, and evaporation loss is greater. Night watering is to be avoided unless it is the ONLY time possible because it greatly increases the chances of fungal diseases by keeping the leaf blades wet for hours.

- Water the lawn — not driveways, sidewalks, or roads — by adjusting sprinkler heads.
- Mow grass at the right height both before and during the summer. Raise cutting heights on cool-season lawns BEFORE summer stress arrives, and stay off the lawn with mowers and other traffic during extreme drought periods. Mowing on the taller side of the recommended mowing height increases the depth of the root system, shades the soil (minimizing evaporation losses), and improves drought tolerance (see table 1).
- If your current grass is not drought-tolerant, consider replacing it with one that is.

Table 1. Minimum mowing heights for grass to improve drought tolerance in Virginia.

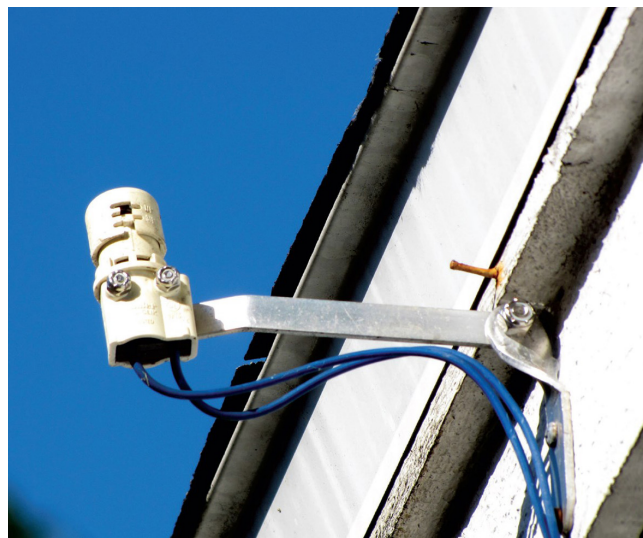
1 to 1.5 inches	2 to 2.5 inches	2.5 to 3 inches
Bermudagrass Zoysiagrass	Centipedegrass	Tall fescue Kentucky bluegrass Perennial ryegrass Fine leaf fescues St. Augustinegrass

- Precondition your cool-season lawn for summer by applying fertilizer in the late summer or early fall, avoiding large spring applications of nitrogen-containing fertilizers. This favors root growth and better drought tolerance. Lush, overfertilized lawns require more water.
- Remember that newly sodded or seeded lawns require more frequent watering (for the first three to four weeks) than do well-established lawns (those older than a year).
- Keep the mower blade sharp.
- Annual core aeration can loosen compacted soil and allow water to infiltrate deeper into the ground.

What About Sprinklers?

If you want an inground irrigation system, a reputable irrigation consultant will help to design the appropriate system for your lawn and landscape and will see that you choose the appropriate components to create an efficient and effective irrigation system. Irrigation systems in the 21st century are commonly equipped with rain sensors that bypass computerized irrigation programs that might otherwise apply water.

Most existing systems can be updated with a relatively inexpensive rain sensor to further improve water use efficiency. It is also becoming more common on home lawn irrigation systems to install soil moisture sensors.



Rain sensors optimize water use efficiency and should be a part of any installed irrigation system.



Properly calibrated soil moisture sensors predict the moisture requirements of lawn and landscape plants and are excellent additions to irrigation systems.

While more expensive to install than rain sensors, these inground sensors are much more effective in optimizing water savings, typically reducing watering needs by 50 to 75 percent by ensuring that the turf and landscape plants are only given the water that is needed.

If you are selecting portable, aboveground sprinklers, look for sprinklers that keep water close to the ground rather than sending a fine mist or spray high into the air. This will help reduce evaporation as well as keep the water on the lawn.

To conduct a basic irrigation system audit, check for uniform water distribution and overlap of any irrigation system by placing at least five broad, wide-mouthed containers at distances of approximately 20, 40, 60, 80, and 100 percent of the maximum throw of the sprinkler(s). Collect the output and note how long you ran the system and the average depth of water collected in the containers. This test will do several things. First, it will help to diagnose and prevent either dry or saturated areas that can lead to an unhealthy turf. Second, it will allow you to determine irrigation application rates so you will know how long you can (or want to) run your irrigation to deliver a desired amount of water to your lawn.

For instance, assume you have determined (or your Extension agent has recommended) that it is necessary for your turf to receive 1 inch of water per week to perform at its best during the hottest, driest months of the year. Using the container collection system described, you learned that you need to run your system for 60 minutes to deliver 1 inch of water. However, you also notice that at about 30 minutes into the irrigation event, there is significant puddling on your lawn, telling you that the soil is not accepting the water as quickly as it is being applied. By knowing what the system is capable of delivering and paying attention to how the soil accepts the applied water, you can develop a responsible irrigation program in which you run your sprinklers for no longer than 30 minutes per irrigation event in order to avoid puddling and the undesired loss of water due to surface drainage. This will provide one-half inch of water, and you can now schedule two irrigation events during the week in order to deliver the desired volume of water. Such a strategy maximizes the efficiency of water use and promotes a healthy turfgrass system at the same time.

Anything Else I Can Do?

Remember that what we do to our lawns and landscapes affects local water quality and that of the Chesapeake Bay and other watersheds. Contact your local Virginia Cooperative Extension office (www.ext.vt.edu/offices) and speak with an Extension agent or Master Gardener volunteer for more advice and information on upcoming lawn and landscape classes and seminars in your area.

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