



With drought and increasing water needs, are green lawns in the past?

Not so fast, experts say

With most of Texas currently in a drought, should homeowners just “go blonde”—quit watering and let their yards turn an ugly brownish-yellow? Or maybe dig up the grass and replace it with rocks? While both are options, turfgrass experts with the Texas AgriLife Extension Service said homeowners don’t have to take such drastic measures.

Dr. Richard White, professor of turfgrass physiology and management in Texas A&M University’s Department of Soil and Crop Sciences, said homeowners should “absolutely not” give up on growing grass. But, he added, “We should not continuously strive to produce lawns that are jalapeño green.”

“Turfgrasses are a resource for healthy urban and suburban ecosystems, and people should become more informed about the proper care needed to sustain healthy lawns,” White said.

Dr. Doug Welsh, professor and associate department head for Texas A&M’s Department of Horticultural Sciences, agreed. “Lawns don’t waste water, people do.

“By incorporating landscaping principles outlined in AgriLife Extension’s Earth-Kind® publications, the same green Texas-style landscape that we are accustomed to can be achieved and still conserve water,” he said. Earth-Kind® is a federally registered trademark of the Texas AgriLife Extension Service, Texas A&M University System.

The recipe for growing healthy grass while conserving water, the experts said, involves choosing the right grass for the location, having good soil, and knowing good management practices, including understanding when and how much to water. With many Texas cities implementing drought-related water conservation restrictions, knowing this information is even more important.

The right grass

According to White, more than half of the lawns in Texas are planted with St. Augustinegrass. Bermudagrass, buffalograss, centipedegrass, and zoysiagrass, a native grass becoming more popular with homeowners, are the other most commonly used warm-season lawn grasses in Texas. Kentucky

bluegrass and tall fescue are cool-season grasses that are sometimes grown in the northern parts of the Texas Panhandle. (See *Common Turfgrasses in Texas*, pages 6 and 7.)

In addition to knowing the right species of grass for their specific climate, Texans should know which grass varieties are the most water-efficient and drought-tolerant for their region.

“All grasses use about the same amount of water at the same rate when it is available in the soil,” said Dr. David Chalmers, professor in Texas A&M’s Department of Soil and Crop Sciences and state Extension turfgrass specialist, adding that with the right timing, most grasses can persist with 30 inches of water a year.

“Much of their persistence and survival, if water is restricted, depends on their drought tolerance or being able to survive without rainfall or irrigation,” Chalmers said. “Drought tolerance and water use are not the same thing.”

White said the drought tolerance of many of the turfgrasses grown in Texas has improved. “Using a turfgrass variety that is well adapted to a specific location in the state is an important water-saving strategy,” he said. “The advantage of many improved turfgrass varieties is that they can survive longer periods of drought than other varieties.”

Texas A&M has developed drought-tolerant species, and many can be found on the Texas AgriLife Research and Extension Center at Dallas’ website at urbansolutionscenter.tamu.edu/hot-topics/grasses.

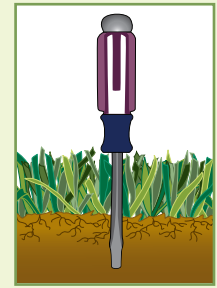
Chalmers and Dr. James McAfee authored AgriLife Extension publications, *Turfgrass Selection for Texas* (L-5519), which outlines the turfgrass species and varieties that are best adapted to the different climates in Texas; and *Turfgrass Establishment for Texas* (B-6239), which lists the things necessary to have a healthy lawn. The publications are available through the AgriLife Extension Bookstore at agrilifebookstore.org.

To buy the grass, White said homeowners can check the Turfgrass Producers of Texas website at txsod.com, which lists producers and the grasses they grow. ⇒



How deep is your soil?

According to a 2006-2007 study done by Texas AgriLife Extension Service specialists looking at how turfgrasses survive a prolonged drought, the key was soil depth. Twenty-five varieties were planted in an agricultural native soil that was 16- to 18-inches deep; all survived the 60 days without water. The same 25 varieties were planted in soil with 4 inches of topsoil, the requirement by the city of San Antonio; none of those survived. (The study was sponsored by the Turfgrasses Producers of Texas and San Antonio Water System.)



Managing the grass

While using a well-adapted variety is a vital water-saving strategy, White said the management of grasses is more important.

“If the grasses are not managed correctly, then home consumers will not see the benefits of using the improved grasses,” he said. “Managing existing lawns properly is probably one of the best ways to achieve substantial water savings.”

The right soil

The soil is a fundamental component of a successful formula for growing a healthy lawn. According to Chalmers, homeowners need to change their perspective on growing grass: They need to think about turfgrass as three-dimensional, inclusive of the soil beneath the turf.

“It’s not just about the specific turfgrass they put into place, but what type of soil they have, how deep it is, and how appropriate it is to growing plants,” he said.

Turfgrasses are healthier, need less water, and tolerate environmental stress better if they are grown in a deep, noncompacted soil, Chalmers said. A soil depth of at least 10 to 12 inches is preferred.

“Often there is little regard for protecting the soil as an important resource during lawn establishment, especially during home construction,” Chalmers said. “Lawns need good soil infrastructure—the quality of the soil and the depth of the soil—that will support any plant.”

When new homes are built, the soil is compacted by heavy construction vehicles and is not put back the way it was. “Whenever we disturb the land, we have to wonder if it is put back in the right manner,” Chalmers said. “Plants can’t do all the heavy lifting. They have to have good, noncompacted soil to grow.”

Chalmers said the best scenario for growing grass is deep soil with good aeration through the root zone and a turfgrass with a deep root system. “When homeowners have that, their grass can go longer

between irrigations, gradually go dormant if not watered, and persist more readily through drought because of the root system that gradually draws water,” he said.

Residential consumers can use aerification—inserting a tine through the turf and into the soil—to help the lawn capture more water when it rains or when the lawn is watered, White said.

Mowing at the proper height will help maintain a dense canopy, slow the rate of water movement from plant leaves into the atmosphere, and provide for optimum root growth and development, he said.

Another management tip to help conserve water, White said, is limiting the application of fertilizer. “Rapid leaf growth caused by large amounts of applied fertilizer increases water loss from the turf and will increase the need for irrigation,” he said. Too much fertilizer often reduces the grass’ drought tolerance and decreases the chances for the lawn’s recovery if watering restrictions are imposed.

When to water?

Knowing when to water is another crucial element in managing a healthy lawn.

“Home consumers have heavy reliance on the presence of the grass being green to determine whether it is healthy or not,” Chalmers said. “This can lead to overwatering.”

“Some people typically irrigate at the first sign of stress—when the grass starts to wilt; it may mean the grass needs water or it may be just the time of day that it wilts,” he said.

Earth-Kind® proponent Welsh recommends homeowners take advice from the lawn itself. “Pay attention to what your lawn is telling you.”

He said homeowners should water when their lawn needs it, “not according to a time clock, calendar, or habit. The best switch on an irrigation system time clock is ‘O-F-F’! Keep the system off until the lawn tells you it is time to water.”

“Lawns readily show you when water is needed,” Welsh said. “They wilt, show footprints from people who tread on them, or turn dull, grey-green. St. Augustinegrass will even roll its leaves lengthwise in an effort to reduce water loss from the leaf surface.

“If you are having trouble reading the water-stress symptoms of your lawn, then trust the best moisture meter ever invented—your index finger,” he said. “Stick your finger into the soil 2 to 3 inches deep. During the growing season, if the soil is cool, then there is enough moisture present for plant use. If the soil is warm or dry to the touch, then it is time to water.”

The big question: How much water?

“Landscape water use can account for 25 percent of the annual water use in many Texas cities,” Welsh said. “The percentage increases dramatically to 60 percent for the summer months. For example, the average water use for a residence in Bryan, Texas, is 6,000 gallons in January; in July it is 16,000 gallons. The difference is primarily landscape irrigation.”

Although homeowners often hear that lawns need 1 inch of water every week, this is not always true, White said. “The majority of home consumers could reduce the amount of irrigation water that they apply by 25 percent and still have an attractive and healthy lawn.”

Chalmers said there are many variables to consider when knowing how much to water. Rain gauges measure rainfall in inches; irrigation recommendations in the absence of rainfall are usually in inches; but municipalities charge consumers for water use by gallons used. And irrigation controllers and sprinklers are typically set to water for a certain number of minutes.

“Time watered, in minutes, rarely links back to gallons watered and inches applied,” Chalmers said. “Therein lies the challenge to watering with good knowledge and practice: to understand how to apply water in measured amounts (inches), while accounting for the contribution of measurable rainfall (inches) and relating both minutes and inches of applied irrigations to gallons consumed.”

White agreed that home consumers need to know their irrigation system to water efficiently and recommended that they understand the relationship between the minutes the system operates and the depth of water applied to that area of the lawn.

“Understanding this relationship will help home consumers set their irrigation systems to operate for an amount of time that will apply the correct amount of water,” White said. “Water moves into most clay soils at a rate of about 0.09 inches per hour. This rate is not very fast. Irrigation systems, on the other hand, may apply water at a rate of 0.25 to 1.5 inches per hour or more. So, for efficiency, the irrigation controller should be set to only apply about 0.10 inch of water at a time. Applying water faster than a soil can absorb in one setting results in water moving across the soil surface, running into the gutter, and down the storm drain.”

A useful tool for calculating the amount of irrigation water needed for lawns each week can be found at the Texas ET Network website (texaset.tamu.edu). This site gives daily potential evapotranspiration (ET) data and weather summaries from 28 Texas weather stations. Home consumers can select a weather station in their area and use the information provided to calculate water application rates, White said. (See related story on pages 10-12.)

The bottom line, he said, is people need to know more.

In a survey of 800 home consumers, 25 percent of those surveyed used 50 percent of the total drinkable water, White said. About 90 percent did not know how much water they consumed each month, but 85 percent considered themselves to be efficient irrigators.

“Water consumption by the group increased by as much as 400 percent during the summer from lawn and landscape watering,” he said. “More efficient irrigation practices by this group could have resulted in water savings of 24 to 34 million gallons of water a year.”

For more information on turfgrass, visit twri.tamu.edu/txH2O. ➔

Illustrations drawn by Mary-Margaret Shread, AgriLife Communications.



Not just for looks

Having a healthy, green lawn serves more purposes than just winning “Yard of the Month” awards. Well-cared-for turfgrasses have many functional benefits, including stabilizing the soil, keeping weeds in check, and keeping dust and dirt from entering people’s homes.

Dr. Richard White said turfgrasses also help with global warming. “All turfgrasses, and particularly warm-season grasses grown in the southern United States, are very efficient at trapping carbon dioxide, a major greenhouse gas,” he said. “Turfgrasses can trap the carbon dioxide for many years so that it does not contribute to global warming.”