

Lawn and garden watering represents about half of outdoor residential water use. Much of the water applied to lawns is wasted due to overwatering, leaks, evaporation, and wind. It is possible to maintain lawn of the same quality with less than half as much water through efficient watering and lawn management. Weather, soil, mowing, and fertilizing all affect water needs, but the type of grass and use, thatch management, pest control, and other lawn care practices have an effect, too.

The first step in reducing lawn water use is to assess all aspects of the growing conditions and the lawn care program. Changing the kind of grass may be in order, but it will not have a large effect without a good management program. Establishing a new lawn requires considerably more water than maintaining mature grass. The best time to start a water-conserving lawn care program is at the beginning of the season. Lawn should be prepared in the spring for low water use during the summer. Changes made when the lawn is under heat stress will be detrimental to the turf.

Choose Grasses that Require Less Water

Warm-season grasses (bermudagrass, zoysiagrass, and buffalograss) typically require less water than cool-season grasses (bluegrass, fescue, and ryegrass). Keep in mind that warm-season grasses do not grow well in shade, and most lawns have areas shaded by trees, buildings, and landscape structures. In a natural environment, warm-season grasses dominate sunny areas, and cool-season grasses dominate shady areas. Although some may object to the patchy look of two different kinds of grass, this approach reduces total water use.

Cool-season grasses green up earlier in the spring and stay green later in the fall. This is a desirable characteristic, but a longer growing season means a longer watering season. Also, cool-season grasses require more water than warm-season grasses during hot weather. Choosing a water-conserving turf may require some compromise in appearance. To learn more about your options, see *Turfgrass Selection* (MF2032).

Consider Native Grasses

Native grasses are a popular choice for lawns because of their low water and maintenance requirements and natural appearance. Most native grasses are warm-season grasses and should be planted in full sun. Buffalograss, the native grass most commonly used for turfgrass, grows best in areas that receive less than 25 inches of rainfall per year.

Once established, native grasses should be watered and fertilized sparingly. If overwatered and fertilized, native grasses can become weedy, which defeats the purpose of selecting a low maintenance variety. It is not realistic to expect the low maintenance of native grass with the look of a high-quality lawn

grass. See *Buffalograss Lawns* (MF658) for more information.

Make sure the site is suitable for growing native grasses and that the natural look fits the surroundings. Under the right conditions native grasses can save water and time, but it takes water to get them established and weeds can be a major problem.

Save Water with Good Soil Preparation

Lawns are planted around buildings after construction on soils that have been graded, filled, trenched, and compacted by heavy trucks and machinery. Sites may feature an undesirable mixture of different soil types of various depths and degrees of compaction. Problems may be graded over and covered with grass, so they are not immediately apparent to the new resident.

Compacted soils restrict rooting, resulting in a turf of poor vigor that needs frequent watering. Fine-textured clay and silt soils are more vulnerable to compaction. Shallow rock layers and southern slopes can be problematic when it comes to watering.

Ideally, topsoil should be removed and stockpiled before construction. Afterwards, the subsoil should be tilled and graded to the final shape before applying topsoil at a uniform depth throughout the lawn area. Before planting, incorporate a 2-inch layer of peat moss, compost, or other organic matter to a depth of 6 inches. Do not add sand to clay or silt soil unless the final mixture is at least 85 percent sand. Otherwise, adding sand makes the soil harder.

Soil improvement is more difficult while maintaining an existing turf. In this case, the most practical and least costly approach is core aeration, which involves making small holes in the turf to improve water infiltration and rooting. The other choice is to remove, reconstruct, and reestablish the turf. This is expensive but may be best in some situations.

Weather Affects When and How Much to Water

Weather has the greatest impact on the condition of the grass and the amount of water needed. Weather factors that influence how much and when to water include temperature, sun, wind, humidity, and natural rainfall. The combined effect depends on how extreme one or more of these individual factors may be or how long they last. A great deal of water is wasted by not considering the current local weather conditions. Watering according to the calendar or using an automatic irrigation system with timed intervals can be wasteful.

Soil moisture sensors eliminate the guesswork by measuring the actual moisture content of the soil. Sensors are reasonably priced and can be hooked up to an automatic sprinkler system. Computer programs that determine how much to water based on local weather conditions, soil conditions, type of grass, and the lawn care program can be set up to work with an automatic irrigation system.

How to Water Efficiently

When and how much to water is largely determined by weather and soil conditions. During adverse weather conditions applying enough water to ensure turf survival is all that is necessary. Maintaining a dark green lawn at all times during the growing season takes a lot of water.

It is recommended that you apply enough water to soak the soil to a depth of 6 to 8 inches at a rate that allows all water to be absorbed by the soil with no run-off. Wait until the grass shows signs of wilting, but do not wait until severe wilting and browning of the foliage occurs.

It takes about an inch of water to soak a soil properly, but some soils require more and some less. Poke a long screwdriver or rod into the soil to reveal the depth of water penetration. Moist soil is easily penetrated. The probe will stop when it reaches dry soil.

The watering interval varies from once every two or three weeks during cool spring and fall weather to twice a week during severe drought. Watering too much is not only wasteful, but it can be harmful to the turf. Watering a lawn every day causes shallow rooting. Consequently, the turf will not survive for more than a few days if water restrictions are imposed. Frequent watering and shallow rooting hastens thatch buildup, increasing the chance of disease.

Applying one inch of water to 1,000 square feet requires 623 gallons of water. Multiplying this amount by each thousand square feet of lawn area and the number of times the lawn is watered during the season adds up to a tremendous amount of water. The results demonstrate why you should water no more often than necessary.

Fertilizing Affects Water Use

A reasonable amount of fertilizer is needed to maintain a dense, healthy turf of good color. Excessive fertilizing promotes excessive growth that requires extra watering and more frequent mowing and can cause certain diseases.

Fertilize minimally or not at all during severe heat or drought conditions. Maintain a moderately green color during favorable weather and accept a lighter color at times of weather stress. Do not try to maintain a lush green color at all times. To learn more, see *Lawn Fertilizing Guide* (MF2916) and *Fertilizing Kansas Lawns* (MF2324).

Mowing Affects Water Use

Most people like the look of a short-mowed lawn, but a short lawn is less drought-resistant and requires more frequent watering. Also, short-mowed lawns are more likely to be invaded by weeds.

Cool-season grasses are most drought-resistant when mowed at a height of 2 1/2 to 3 inches. This encourages deeper rooting, and longer foliage shades the soil surface, keeping it cooler during hot weather. Warm-season grasses thrive in the summer heat and tolerate shorter mowing during the summer. To learn more about how mowing affects water use, see *Mowing Your Lawn*, (MF1155).

Key Points

- Select adapted grasses that require less water.
- Prepare soil properly before planting to encourage grass to develop deep roots.
- Apply water at a rate that can be absorbed into the soil without runoff.
- The most efficient time to water is early morning. Night watering favors disease development.
- Water less in the spring and fall and adjust accordingly during summer drought.
- Deep, infrequent watering is more efficient than frequent, shallow watering. Once a week is enough for average conditions, but water twice a week during severe drought.
- Adjust watering frequency according to the weather. Following a calendar program wastes water.
- Soak the soil to a depth of 6 to 8 inches, and then wait for signs of turf needing water.
- Fertilize only enough for acceptable color. Excessive fertilization results in extra watering and mowing.
- Mow at the high end of the recommended range for each species. This improves drought resistance by encouraging deeper rooting.
- Keep thatch layer less than 1/2 inch thick. Turf with excessive thatch is less drought resistant.

For more tips on maintaining an attractive lawn while conserving water, see *Watering Your Lawn* (MF2059).

Jared Hoyle, Turfgrass Specialist

Steve Keeley, Professor of Turfgrass Science

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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MF2068 January 2019