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in Wisconsin.

Watering your lawn

Watering a lawn properly can reduce weeds, provide a place for play or other recreation, and enhance property value. Yet applying too much water can harm your lawn, cost you money (even in Wisconsin where water is abundant and relatively cheap), and degrade the environment.

Water conservation is becoming increasingly important in urban areas where groundwater is being used faster than it is replaced by rainfall, and where excessive irrigation may cause runoff that affects streams, rivers, and lakes.

To water or not to water?

In many cases lawn watering is unnecessary in Wisconsin. Most lawn grasses, especially Kentucky bluegrass, will survive periods of drought lasting up to two or three months. They survive by allowing their leaves to die while keeping their crowns alive, a condition called summer dormancy. The crown is the growing point from which roots and leaf shoots emerge. It is located just at or slightly below the soil surface.

The crown will survive for a long while during drought. Then, when moisture returns to the soil for a week or ten days, the crown will grow new leaves and the lawn will begin to turn green again.

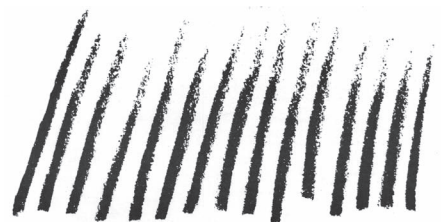
It is true that long stretches of drought and excessive heat can eventually kill grass. And watering can prevent this. If grass dies, the dead areas of the lawn will need to be reseeded or covered with sod when favorable growing conditions return.

Drought-adapted lawn grasses

Kentucky bluegrass is the most common lawn grass in Wisconsin and has a well-tuned dormancy mechanism. During a drought the leaves die and turn straw-colored but the crown can survive for two to three months.

Fine fescues, including red fescue, Chewings fescue, and hard fescue, are grasses well-adapted to dry areas whether sunny or shaded. They are slow-growing and their leaves have less surface area than those of other grasses, and therefore they use less water because less water evaporates from them.

Tall fescue grass is very different from the fine fescues mentioned above. It has a deeper root system than those grasses, and this allows it to survive drought by using water deeper in the soil. While this grass is a good choice for well-drained areas, it may die if covered by ice.



Overwatering can cause trouble

While watering is sometimes necessary, overwatering can cause problems. Diseases occur more frequently and cause greater damage in lawns kept too wet. Also, frequent irrigation may discourage deeper root growth, leading to an unhealthy lawn that is more susceptible to environmental stress. Finally, wet soils are more prone to compaction than dry soils, which means that excessive traffic on an irrigated lawn may degrade the soil structure and hinder root growth.

However, if you want green grass for any reason—because you host lawn parties or other outdoor events, or just like the look of a lush lawn—watering may be necessary.

Lawn care practices that reduce the need for watering

The following practices will help you create a healthy lawn that stays greener longer during dry conditions.

- **Keep the grass mowed to a height of three to four inches.** The depth of the roots is directly proportional to the height of the grass, so don't cut it too short. Taller grass has a deeper root system with more access to water and therefore has a greater tolerance to drought.



- **Never mow grass when drought symptoms are evident.** Mowing creates a wound through which water can rapidly be lost. Under normal rainfall conditions, this is not a problem. But mowing in drought conditions will cause your grass to turn brown faster than normal. The first signs of drought stress are that the grass blades turn a slightly bluish hue and fail to spring back up when pressed down. You can check for drought stress by simply walking across your lawn. If your footprints are visible for more than about 10 minutes, the grass is drought-stressed and you should avoid mowing it. Don't worry that your grass may grow too long. Drought-stressed grass stops growing on its own.
- **Do not fertilize more than the recommended rate, and do not fertilize at all during a drought.** The nitrogen in lawn fertilizers speeds leaf growth... and the faster a lawn grows the more water it requires. Follow the guidelines published in *Lawn Fertilization*, University of Wisconsin-Extension bulletin A2303, to supply the correct levels of nutrients.

How much water is too much?

If rainfall is short and you have decided that allowing your grass to go dormant is unacceptable, you must decide how much water to apply. Wisconsin soils hold anywhere from one to three inches of plant-available water in a typical lawn root zone. If your soil is deep, and is black or dark brown, it may hold as much as three inches of water. If it is sandy, or is composed of a thin layer of topsoil over a compacted clay layer, it will hold closer to an inch.

Grasses use roughly one inch of water each week, but use more during hot, sunny periods and less during cool or cloudy weather. This means that during periods of no rain the water in the soil may be used up by the lawn in anywhere from less than one week to more than three weeks, depending on the quality of the soil and the weather conditions.

In the absence of rain it is best, in most cases, to apply about one inch of water weekly, all at one time. Applying this amount generally results in wetting the soil to a depth of four to six inches, which includes most of the lawn's root system. Watering less than this can result in the water penetrating only shallowly into the soil, and this shallow penetration encourages roots to grow near the surface—which in turn reduces the lawn's ability to survive and stay green during a drought. Applying more than one inch at a time can be wasteful in soils that will only hold an inch of water.

It is possible that not all areas of your lawn will use water at the same rate. If this is the case you should be sure to water only areas that need watering. For example, shaded grasses use about half as much water as grasses growing in full sun.¹ Begin watering an area of your lawn only when it shows signs of drought stress—that is, when grass leaves turn a bluish hue or fail to spring back when stepped on. If these signs are not observed, the lawn doesn't need to be watered.

How to know how much water you are applying

Do a simple test to determine how long it takes your sprinkler to apply an inch of water. Place straight-sided containers (coffee cans, tin cans, etc.) every five or ten feet along a straight line extending from the base of the sprinkler to as far as the sprinkler's water reaches. The containers can be of various sizes, so long as they all have straight sides.

Run the sprinkler for half an hour, then measure the water depth in each of the containers. Add up the various depths, divide that total by the number of containers, and you will have calculated the average depth. Divide 30 (minutes) by that average depth (inches) and you will have calculated *so many minutes* per inch—that is to say, you will have calculated the number of minutes your sprinkler takes to apply one inch of water. This rate will vary with every sprinkler.

Set the sprinkler on the lawn where it won't spread water onto a driveway or street. Turn it on with water running at the same force as in your test. (Water flow must be consistent for the calibration to hold true.) Let it run for the time required to apply one inch. If water pools and runs off your lawn, change your method in the future: apply only one-half inch of water at one time, then wait a day or two before applying the other half inch.



When to water

It is generally best to water your lawn early in the morning when water is less likely to evaporate quickly. Evaporation is also slow at night, but watering at night increases the possibility of disease because the grass leaves will stay wet for many hours. (Also, municipal water systems often have less demand early in the morning, so using water then may reduce the need for additional water towers or wells.)

If you have an in-ground irrigation system that operates on a timer, replace the timer with a “smart” controller that irrigates the lawn according to environmental conditions such as evapotranspiration rate or amount of soil moisture. These “smart” systems have become affordable and often save enough water to pay for themselves in a short time. At the very least, install an irrigation shut-off switch that disables the system during a rainstorm. Systems that run on timers without shut-off switches almost always apply too much water.

Watering new lawns

Keep newly seeded areas moist until the lawn is established. Thoroughly water the seeded area after spreading straw mulch over the seedbed. Watering will provide moisture for seed germination and will help keep the straw from blowing away. Irrigate at least once a day for two to three weeks, or until the grass has uniformly germinated. Apply just enough water to keep the seeds and soil moist. Overwatering may cause seeds to float to the surface and die.

Timers on automatic irrigation systems can be useful for ensuring that the correct amount of water is applied. Plantings in hot and dry conditions or on south-facing slopes may require more frequent irrigation.

After seeds have uniformly germinated, water the new lawn every two to three days in early morning.

For more information on establishing new lawns, see UWEX Publication *Lawn Establishment and Renovation* (A3434).

¹Grasses shaded by houses usually need even less water than grasses shaded by trees. Tree-shaded grasses are usually competing for water with the trees, while house-shaded grasses may not have this competition.



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