Outdoor Irrigation Best Management Practices

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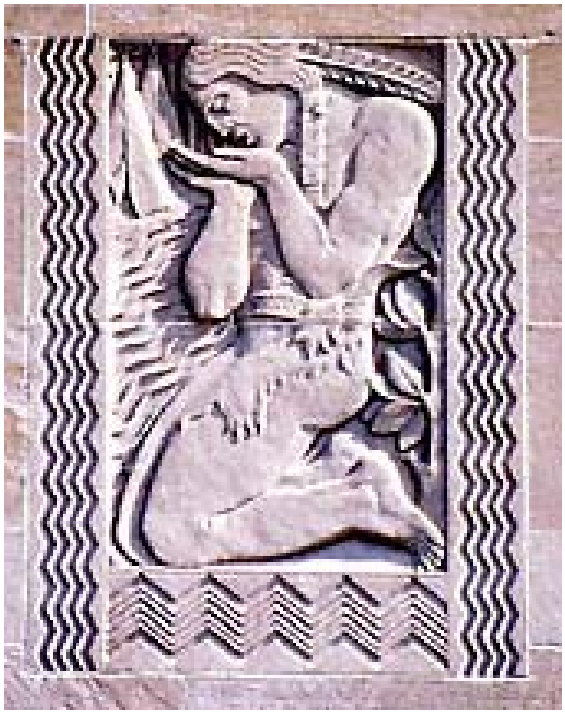

The Best Time Of Day To Water Your Lawn

By Joe Knapp

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What is the best time of day to water your lawn? This is a very common question that just about everybody with a lawn wants to know. I have heard of and seen many practices regarding this topic, and I have come to the conclusion that many people have it wrong. Even people who have done research and combine the research with their common sense often get it wrong.

Your lawn needs about one inch of water per week. Too much water or too little water is not healthy for your lawn. The best way to accomplish this is with one really thorough soaking at the right time. Watering every day a little bit, or walking around your lawn spraying your hose every day may actually spray your lawn with the required inch per week, but your lawn still most probably will not be getting the required inch per week. This explains why daily watering is pointless. Your lawn does not require that much water anyway. Watering your lawn a thorough inch every day will only be detrimental to your lawn, and spraying it every day a little bit is completely pointless, since it will just evaporate when the sun comes up.

The best time of day to water your lawn is at about three or four in the morning when the water pressure is the highest. This way you will accomplish two vital things:

1. The water will have a chance to sufficiently soak into the topsoil.

2. Whatever water is left over will be evaporated when the sun comes up, thereby not giving the water a chance to create any fungi or molds which come about when water just sits around on the surface of your lawn.

If you have an automatic sprinkler system, it is very easy to set it at the right time for the right amount of water. However, if you have a job which allows you to sleep at night, waking up at three thirty in the morning to water your lawn may not be the best way to keep that job. I would certainly never even consider waking up that early in the morning to water my lawn.

The next best thing which will still accomplish these two vital effects is to water your lawn as early in the morning as possible BEFORE THE SUN COMES UP. This way most of the water will still soak into the topsoil, and whatever water is left over will be evaporated as soon as the sun comes out and starts heating things up. This early morning time can also be very challenging, since most of us either need to get ready for work, eat breakfast, drive carpool, or do one of the other million things we all need to do in the morning hours.

If watering your lawn in the early morning hours is not possible, the next best time of day to water your lawn is in the evening after the sun has already cooled down significantly. This will allow the water to soak into the topsoil properly. However, the leftover water will lay

around all night long until the sun comes out and evaporates it. This can cause various fungi and molds to grow in your lawn, but it is still better than nothing.

The worst time of day to water your lawn is in the afternoon when the sun is beating down at full strength. The water will evaporate almost as quickly as it lands on your lawn, making this watering completely worthless. I see automatic sprinklers going on in the middle of the day all the time, but let me assure you that this accomplishes nothing unless the sprinklers stay on for hours at a time. Watering your lawn in the afternoon in such a way that will provide an ample amount of water to soak into the topsoil takes significantly more time and water than watering in the early morning, and is therefore almost always completely pointless. For this same reason, walking around with a hose and spraying your lawn is also basically pointless, since your lawn will not get anything close to the inch of water that it requires. The water will instead evaporate almost instantly.

The best way to figure out if you lawn is getting the required inch per week is to put out a few empty cans next to your garden or lawn and to see if it fills up an inch high of water. If you have a sprinkler system, this is a good way to see how long it takes for the sprinklers to soak your lawn with an inch of water. However long it takes to fill up the cans with an inch of water is a pretty good indicator of how long it takes to soak your lawn with an inch of water.

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Water Wisely: The Best Time to Water Your Lawn

Keep that grass green by using your sprinklers at the proper time.

If you were to ask several people how often you should water your lawn, and for how long, you're bound to get many different answers. Chances are one will be right on the money. But which one? There are many theories on proper watering. Some people do it every day, others once a week, or even "whenever I get around to it." How do the experts feel? Here's the scoop, according to those in the know.

First of all, you should forget daily watering for a couple of reasons. It simply isn't necessary, and with many restrictions in place lately regarding "odd and even day" watering, it's not allowed. Besides, that method isn't exactly fair, since those with odd-numbered addresses get two straight days of watering when a month contains 31 days. But there's no need to be concerned. Your lawn doesn't need that much water anyway.

Most experts agree that your lawn needs about an inch of water a week, be it from rain or your sprinkler. That can be accomplished with one good, thorough soaking instead of daily watering for a few minutes at a time. It's fairly easy to determine how long your sprinkler needs to run to provide an inch. Next time you water, place a couple of coffee cans or other containers in the path of the sprinkler. Note how long it takes to get one inch of water in the containers.

The best time of day to water is during the early morning hours – around 3:00 - when the water pressure is highest. In addition, water will have a chance to soak down into the ground before evaporating, thus providing the most benefit for the lawn. And any water left on the lawn will be evaporated away in a timely manner when daylight arrives.

Mid-afternoon watering is probably the worst time to water, as far as efficient water use is concerned. Too much will evaporate away before it has a chance to soak down. You'll be using a lot of water, but won't be doing your lawn all that much good. Even though it may be very tempting to turn on the sprinkler during one of those scorching days, hold off on it.

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Watering Correctly Saves Time, Money, and Plants

Sharon A. Yiesla
Unit Educator, Horticulture, Lake County

Past Issues

The heat of summer is here, and along with it, water restrictions in many municipalities. Home gardeners may fear that with restrictions in place they won't be able to properly water their gardens. Nothing could be further from the truth. Summer water restrictions can force us to re-evaluate our watering practices. In many cases we may find that our watering practices are wasteful and inefficient.

For established plantings, deep, infrequent watering is recommended. In most cases, an inch of water per week (rain plus irrigation) should be sufficient. Applying that inch of water in one deep watering will encourage deeper rooting, which leads to stronger, healthier plants. Watering once a week also fits well into most municipal water restrictions. Shallow, frequent watering, on the other hand, will lead to shallow root systems and high water loss through evaporation. With shallow watering, such as light frequent sprinkling, you actually end up wasting quite a bit of water and still don't meet the needs of your plants.

The best time of day to water is early morning before the temperatures begin to rise. This gives the plants a good supply of water to face the heat of the day. Early morning also tends to be a time of lower winds and thus reduced evaporation. If watering cannot be done in the early morning, very late afternoon is also satisfactory. It is important to water early enough so that the leaves have time to dry before nightfall to avoid development of fungal diseases. If possible, choose watering methods that will not wet the leaves (such as soaker hoses) and thus allow for late evening watering.

There may be need to evaluate the device used for watering. While a lawn sprinkler may be a good method for the lawn, it may not be the best way to water a vegetable garden. Pick a watering device that matches the needs of your garden and the time you have available to water. Once a device is selected, know the correct way to use that device, in order to water efficiently.

Oscillating lawn sprinklers are the most common used devices for watering lawns. The drawback to them is that up to 50 percent of the water put out can be lost to evaporation or drift. Water may also be

delivered unevenly to lawns, since more water is dispensed near the sprinkler. The sprinkler must be moved around to provide even watering over the entire lawn. You can measure the output of these sprinklers by putting out a straight-sided can and measuring the water that accumulates in it.

Root feeders have become popular for watering trees and shrubs. These can be useful devices, but the must be used properly. The roots that are active in water uptake are not found near the trunk, but rather out at the dripline and beyond. Therefore, the root feeder should be used away from the trunk to be effective. Many people put the root feeder too deeply into the soil. Most of the roots in a tree or shrub's root system will be in the upper 12-18 inches of soil. The root feeder should be inserted so that water is delivered to that area.

Soaker hoses have also become very popular. They can be very effective devices for watering vegetable gardens and flowerbeds. Soaker hoses allow water to weep out gently over the entire length of the hose. The benefit to using these hoses is that the leaves are never wet, reducing the possibility of diseases. The water goes right to the root system where it is needed and very little is lost to evaporation. Soaker hoses must be left on for a length of time to water deeply. An inch of water penetrates about six inches in a clay soil. Let your hose run for a while, then dig down with a trowel to see how deep the water went. If it is less than six inches, the hose needs to run longer.

When faced with summer watering restrictions, save yourself time and money by carefully selecting the time and watering device which best suit your garden's needs.

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Lawn Best Ways to Save and Drought Tips

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Train your lawn
If you water your lawn every day, you are encouraging shallow roots. By spreading out your watering you can help your lawn to establish deeper roots that will help it survive drought periods. Generally watering deeper, less days per week will encourage deeper root growth and a more healthy lawn.

Remove only one third of the grass length at each mowing. Try to mow weekly in spring – cutting too much at once stresses the grass. Leave the clippings on the lawn. "Grasscycling" provides free fertilizer (at least ¼ of your lawn's needs), helps lawns grow greener and denser, and doesn't cause thatch buildup. You can grasscycle with your existing mower. For best results, keep the blade sharp, mow when the grass is dry, and mow a little more often in the spring. Clippings left scattered on the surface will break down quickly - if there are clumps mow again to break them up.

Using proper soil preparation and lawn maintenance practices will help to build healthy soil and vigorous, deep-rooted lawns. These lawns are more resistant to disease, tolerate some insect and drought damage, and will out-compete many weeds.

Water At Night
Make sure you only water when the sun is down to reduce evaporation losses. Many irrigation experts feel the best time to water is between midnight and 6 a.m. because evaporation in kept to a minimum.

Repair All Leaks
Check your automatic irrigation system for leaks. To detect a leak in your irrigation system, you must shut down all water use inside your home and be fairly certain that there is no leakage occurring indoors. Once you have done this, you can use your water meter to see if any water continues to flow into your system. To do this, follow the instructions detailed in the water meter page.

Drought Response

The name of the game for lawn care under a drought is "low maintenance." In general: Fertilize less, mow taller and water smarter. During a drought emergency you may be asked to substantially restrict your outdoor watering. Drought response plans vary from place to place, but they all include irrigation restrictions. Complying with drought restrictions will almost certainly require you to reprogram your irrigation controller (if you have one) and substantially cut back or even eliminate outdoor watering. Below are some tips for making the most of restricted irrigation during a drought emergency.

First, minimize fertilization. Lush lawns look great, but heavily fertilized lawns use more water and are more susceptible to drought stress. Most commercial lawn fertilizers call for multiple steps, including a second application of fertilizer about six weeks after the first one. During a drought this is too much. Remember, fall is the most critical time to fertilize a lawn.

Set your mower at a higher level than usual. Cutting your lawn short requires additional water to make it grow. You may not have that water to use on your lawn. Leave it shaggier than usual.

Water smarter using some of the suggestions below.

Alternating Day Watering

In the early stages of a drought, many response plans restrict irrigation to every other day or three days a week often based upon your address. To comply with these restrictions you must reprogram your irrigation controller so that it only waters on the specified days or restrict your manual watering.

Severe Drought Actions

In a severe drought that stretches over several years lawn irrigation with an automatic system may be banned completely and hose irrigation severely restricted. We hope this day will never come, but if it does we must all chip in and do our part. This means shutting down your sprinkler system. Remember, human beings throughout history have survived terrible droughts. It won't be pleasant. It will be inconvenient. You will make it through. The actions you take will determine how much of your landscape will make it through.

OK, you no longer have an operating sprinkler system and your outdoor hose watering is all but eliminated. What do you do?

Prioritize Plants in Your Landscape
The first thing to do in this situation is to prioritize your landscape into three categories: 1) High value/must save; 2) Moderate value/try to save; and 3) Low value/save if possible.

High value plants usually include valuable trees and shrubs that have taken years to establish that will die without water. Moderate value plants might include certain perennials, newer shrubs that can be replaced, and drought tolerant Xeriscape type plants that will require little water anyway. Low value plants usually includes turf grass (which can often bounce back successfully from a complete dry out) and annuals.

The old saying is still true, "an ounce of prevention is worth a pound of cure". If there is a drought forecast for your area – plant more drought resistant plants. See the Xeriscape section of this site for some suggestions.

Tap into Graywater Irrigation Water Sources
It's time for drastic measures. It's time to get creative. The more water you can capture from your faucets, shower, bathtub, and clothes washer the more plants you can probably help survive the drought. You don't need to have an elaborate graywater collection and treatment system (although you might consider this option). Place basins in your kitchen and bathroom sinks to capture water that can then be put on plants outside. If you take a bath, don't drain the water! Use buckets to haul the bath water outside for your thirsty plants. You can also keep a bucket in the shower with you to capture water. Capturing and reusing the clothes washer water may be more difficult, but it is certainly possible to do. If you do this, be sure to use laundry detergent that won't harm your plants.

Place rain barrels at the bottom of your roof downspouts. If any rain does fall you'll be able to use the water more effectively on the plants that really need it.

Ration Water Across Your Landscape
Use your ration of hose water to water your high value plants and trees first. If nothing else, you want to make it through the drought with those plants alive. If there is sufficient water, move on to the moderate value plants, etc. If you do not have further water from the hose, use your graywater on the moderate value plants and then finally the low value plants.

Keep your moderate and low value plants on a starvation diet. Contact local hortaculturalists and plant experts to determine the minimum amount of water required to keep your plants alive. Some plants can survive (not flourish, but survive) on a small amount of water delivered once per week.

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Turf Tips

For the Homeowner

Irrigation Practices to Preserve Water Quality

G.T. Lyman, P.E. Rieke & J.M. Vargas Jr.
Departments of Crop and Soil Sciences and Plant Pathology, Michigan State University

Watering the lawn is a necessary activity for many homeowners who desire a high quality turf. Correctly irrigating turf will ensure better density and growth that allows the turf to compete more effectively with weeds and reduce other pest problems. A healthy turf can offer outstanding protection of water resources by significantly reducing surface runoff and soil erosion and increasing the infiltration rate of water into the soil. The first watering after a fertilizer or pest control application is the most critical. Excessive water after application has the potential to move these products past the active plant growing zone in runoff or leachate. A light irrigation (0.2 inch) after application moves these products into the thatch and root zone, where they are intended to go. There the potential for them to move off the site is significantly reduced. Understanding a few basics of turf growth and the effects of supplemental irrigation can help determine the best approach for your property.

The major factors involved in proper irrigation are the desired level of maintenance, soil conditions, the water delivery system, weather conditions and the timing of water application.

Basics of Turfgrass Growth

The natural cycle for cool-season grasses found on Michigan lawns has two distinct growth peaks during the year. The first is in the spring, when growth increases rapidly following winter dormancy. Characteristic warming temperatures and abundant rainfall during this period promote vigorous growth. Depending on weather conditions, this first growth surge will peak during May or June. In July and August, weather patterns usually provide higher temperatures and low rainfall. The cool-season turfgrasses respond by reducing the amount of leaf and root growth. Extended hot and dry periods will cause the turf to go dormant (stops growth and turns brown). This is a natural process that allows the plant to survive these conditions. The crown of the plant (which is the critical growing point) remains alive, waiting for adequate water. Supplemental irrigation during this period can prevent dormancy and allow the turf to remain green throughout the summer stress period. During late August through October, leaf growth increases as temperatures cool and rainfall is normally more available. Root growth increases during this period and continues into the fall while soil temperatures remain above freezing. The late summer/early fall period is considered the second growth peak of the season. Weather conditions each year determine the duration of the active or dormant periods.

Setting Goals

Setting objectives for your lawn and selecting the level of maintenance that you are willing to commit to are the first steps in determining your irrigation practices. If you desire a high quality lawn and have a reliable irrigation system, this goal will be easier to achieve. Medium- or low- maintenance lawns would not normally be irrigated, and dormancy during the hot, dry periods would be expected. Some homeowners welcome this dormancy as a relief from regular mowing! The amount of water involved in achieving a high quality turf will vary from year to year, depending on weather patterns. It is important to note that an abrupt change in watering practices from regular irrigation to no irrigation during the heat stress period might be harmful to the turf. Dormancy must be induced gradually to condition the grass plants to tolerate the onset of hot, dry conditions. The cost and availability of water in your area are other factors to consider when setting your irrigation goals.

Soil Type

The amount of water required by a lawn is influenced by the soil type. Sandy soils hold less water than loamy soils, so the turf dries out faster in sand. Low-volume, frequent applications ensure that excessive water doesn't move past the plant zone. Soils with more silt and clay or organic matter can hold more water per application. Compacted clay

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soils do not accept water readily, however, and runoff can occur from sloping sites. The goal is to match the delivery rate of the irrigation system with the infiltration rate of the soil.

Amount and Timing of Irrigation

Generally, lawn turf requires 0.5 to 1.5 inches of water per week. The amount of water you apply will vary, depending on the weather conditions and rainfall. In periods of high temperatures coupled with full sun and high wind, lawns will require more water. It is important to note that the water can come from either rainfall or irrigation. Light, frequent applications of water are much more productive than heavy applications once a week. Remember that turf roots are naturally shorter during hot and dry weather, and water moved past the root zone is of no benefit. Research at Michigan State University also indicates that damage from certain turf diseases and insects is reduced when light, frequent (daily) irrigation is used rather than heavy, infrequent watering. That corresponds to 0.1 to 0.2 inch of water. Applying this amount could correspond to 10 to 60 minutes of irrigation, depending on the output of your system. The rate and pattern of delivery for your system can be measured by placing cans in the lawn throughout the irrigation pattern. Turn on the system for one hour and measure the amount collected. Use this information to determine how long it will take to provide the amount needed. An in-ground irrigation system is more expensive but will give better coverage and is easier to use than hose-end sprinklers. The best time of day for watering is early afternoon just before the highest temperature period of the day. This takes advantage of the cooling effects of water. You should slightly increase the amount during periods of high temperatures and sustained wind to make up for evaporation.

Wrap It All Together Success

First, choose a level of quality or maintenance that is compatible with your objectives and choose a range of total water needed (0.5 to 1.5 inches per week). Pick a specific amount after making adjustments for weather and soil conditions. Then split that amount up into several light, frequent waterings. During dry, hot periods, this will be daily irrigation.

Be aware of poor distribution when irrigating during periods of high winds. Additional irrigation cycles may be needed to achieve adequate distribution and prevent dry spots. On sloping lawns, using shorter cycles with repetition will permit time for infiltration to occur and reduce the potential for runoff.

Finally, take control of the sprinkler! Coordinate the irrigation with rain and don't overload your lawn by irrigating in the rain. Install a rain override device on your irrigation system to prevent wasting water. During rainy periods, turn off a clock-controlled irrigation system. Remember that keeping the water where the turf can use it is the most efficient and environmentally sound program.

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