

How much should I water my lawn?

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There is much confusion surrounding residential irrigation requirements, which often lead to over irrigation and water waste – something we should all try to limit. Professional turfgrass managers use knowledge of the water requirements of the species they manage combined with climate data and instruments such as soil moisture sensors to precisely irrigate as minimally as possible to maintain the turf quality their clientele desire. While similar scheduling is possible with residential irrigation systems that are equipped with seasonal adjustment settings, rain sensors, soil moisture sensors, etc., using these types of systems can be overwhelming without training. And so, people tend to overwater to make sure they don't underwater – which doesn't make much sense to me. Another point of confusion surrounding residential irrigation simply comes from the many ways in which we quantify water use – 0.75 inches of rain, 1.0 inch of "ET", or 10 minutes of runtime on an irrigation station. What does it all mean, and again, *how much* water are we talking about? Here are five considerations to help you decide how to water your lawn.

Take control of your irrigation controller. The first step to understanding the irrigation requirement of your lawn is to turn off your automatic irrigation system. This will allow you to implement a wilt-based irrigation strategy – the most basic, and most preferred, method of home lawn irrigation. With this strategy, instead of wondering how much water you need to apply in a given day, week, or month, you simply look for signs of drought stress (Figure 1), and irrigate only the areas that are stressed when you see them. During irrigation, you should irrigate in cycles (to ensure that water doesn't runoff) until the soil feels moist two to three inches below the surface. This is a basic, but effective irrigation strategy that makes over irrigation much less likely – simply irrigate, wait for signs of drought, irrigate, and repeat.

Know thyself (and thy lawn).

What species of turfgrass you are growing, and what is the lowest quality level you'll tolerate? Tall fescue, Kentucky bluegrass, or buffalograss are most common in Nebraska, and irrigation (and other cultural management) strategies vary for each species. In general, buffalograss will require less water during summer to maintain quality compared to tall fescue or Kentucky bluegrass. The irrigation requirement for each species will also decrease if you're willing to accept reduced quality or allow dormancy.

What is ET? If wilt-based irrigation isn't for you, you may want to learn about



Figure 1. The tall fescue on the left is drought stressed, while that on the right is not. Yellowing or browning is usually not a first sign of drought stress. Typically, turf that is drought stressed will have a blue/purple tinge with leaf blades that are rolled or folded. You may also notice that your footprints are very visible in areas where you have walked.

evapotranspiration (ET), a common estimate of plant water use. Evapotranspiration is the sum of water loss to the atmosphere from water movement through a plant (transpiration) and from evaporation from soil (and leaves or anything else that's wet). Evapotranspiration is reported as a depth of water, similar to how we quantify rainfall, which varies with environmental conditions and plant species. A common irrigation practice is to replace water lost to ET on a weekly basis. To do this, you need to know more than just ET. You'll also need to be able to quantify water application so that you'll know when you've reached the depth of water lost from ET. Keep in mind that in this case *depth* doesn't mean how deep water goes in the soil, it's just a reference measurement to quantify water loss and application.

Precisely quantify your water use. For lawn irrigation, forget the phrase *how much*. Instead, think precisely in terms of a depth or a volume of water. Ignore blanket advice that indicates you should run your irrigation system for 10-15 minutes, three to four times a week. Besides not accounting for rainfall, these types of recommendations are meaningless unless you've recently audited your irrigation system, and usually result in over irrigation. Your goal should be to apply a specific *depth* or *volume* of water, perhaps through scheduling irrigation for a certain amount of *time*. A formal irrigation audit uses many collection devices in an irrigation zone to estimate the depth of water applied over an area in a given amount of time. Following an audit, you will know how long you need to irrigate an area to reach a recommended irrigation depth. If an irrigation system audit isn't possible, you can alternatively reach the desired irrigation depth by measure the volume of water applied using your water meter. One cubic foot of water contains approximately 7.5 gallons. So, if you want to know what volume of water you should apply to reach a depth of one inch, visualize a 1 ft³ container filled to a depth of one inch. Because one cubic foot covers an area of one square foot, we can then calculate that one inch of water over one square foot is approximately 0.625 gallons of water (7.5 gallons × 1/12 of a foot = 0.625). If you need to water a 1,000 ft² area to a depth of one inch, you need to apply 625 gallons of water (0.625 gallons per square foot × 1000 ft²). Simply measure the area of each irrigation zone in your lawn. Then, calculate the irrigation requirement for each irrigation zone, and use your water meter to monitor the volume of water you've applied to each area. Just be sure you're not using water elsewhere in your home during the process. To simplify, or if you irrigate from a well, you can install a flow meter specifically for monitoring your irrigation volume.

Pay attention to the weather. However you schedule irrigation, remember to reduce or potentially eliminate irrigation following precipitation events, or even during cool, cloudy weather. This will be important if you attempt to use an ET-replacement strategy. On the other hand, another benefit of following a simple, wilt-based strategy is that your lawn will account for environmental conditions for you – you'll only need to “listen” to your lawn, and look for wilt to schedule irrigation.

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For more information about irrigating home lawns, review the guide at the following link (<http://turf.unl.edu/NebGuides/homelawnirrigation2011a.pdf>).