Watering Your Lawn in Washington State
Tips to Save Water, Save Money, and Have a Healthy Green Lawn

Under-watering lawns leads to poor quality grass. Overwatering leads to high water bills, contributes to lawn diseases, and leaches plant nutrients out of the soil and can move them into the groundwater where they degrade water quality. Knowing how much, and when to water lawns can save water, save money, and improve the health and vigor of your lawn. This paper strives to provide guidance to Washington State residents on how much and when to water their lawns.

How Much Water Should I Apply?
When watering, the goal is to completely fill the soil with water to the bottom of the root zone which is ideally about 12 inches deep or greater for most of the varieties of lawn grasses grown in Washington State.

_Silts, Loams, and Clay Soils:_ Watering one inch deep will typically refill the root zone completely.

_Sandy Soils:_ These soils can't _hold_ very much water. They don't need _more_ water; they need to be watered _more often_, but in smaller amounts. A rough rule of thumb is to apply about ½ inch each time.

How long do I water?
This depends on so many things that it is difficult to estimate accurately. Simply measure it! Set several straight walled cans out (like soup, coffee, or tuna cans) in multiple different places within the area the sprinkler hits before you water (Figure 1), then water for a known amount of time and measure the water depth in the can when you are finished (Figure 2). The average depth of water caught in the cans divided by the run time is the application _rate_. Then, the desired application depth (one inch for silt soils) divided by the application rate is how long the sprinklers need to be left on to apply that amount.

Example: I ran an impact sprinkler on my lawn for 4 hours and caught an average of 0.75 inches of water. So my water application rate is 0.75 inches ÷ 4 hours = 0.19 inches per hour. To apply one inch of water, I need to run 1 inch ÷ 0.19 inches per hour =~ 5.25 hours.

How deep did the water penetrate? An easy way to test the depth of water penetration in the soil is to allow the soil to dry out to where you can see visible water stress in the grass (Figure 4). This will dry out the entire soil profile. Then water for the full irrigation time. After irrigating use a shovel or gardening fork to test the depth of water penetration in various places throughout the lawn. The garden tool will penetrate the wet soil easily and the dry soil underneath will be much harder and will resist penetration. You also may find that your soil is not very deep, in which case the soil may not be able to hold as much water and it will be necessary to apply less water, but more frequently.
**Figure 1.** Cans laid out to measure water application depth.

**Figure 2.** Measuring catch depth.

**Table 1:** Typical total lawn water needs in inches by month for various urban areas of Washington State. (Peters et. al., 2012)

<table>
<thead>
<tr>
<th>Month</th>
<th>Seattle/Puget Sound Area</th>
<th>Vancouver</th>
<th>Spokane</th>
<th>Ellensburg</th>
<th>Moses Lake Walla</th>
<th>Yakima</th>
<th>Wenatchee</th>
<th>Richland</th>
<th>Kennewick</th>
</tr>
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<tbody>
<tr>
<td>Mar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>2.3</td>
<td>2.9</td>
<td>2.8</td>
<td>3.3</td>
<td>3.7</td>
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<tr>
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<td>1.9</td>
<td>3.5</td>
<td>4.3</td>
<td>4.2</td>
<td>4.8</td>
<td>5.2</td>
<td></td>
<td></td>
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<tr>
<td>Jun</td>
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<td>3.1</td>
<td>4.3</td>
<td>5.0</td>
<td>5.3</td>
<td>5.6</td>
<td>6.3</td>
<td></td>
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<tr>
<td>Jul</td>
<td>3.4</td>
<td>4.9</td>
<td>5.6</td>
<td>6.0</td>
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<td>3.9</td>
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<td>0</td>
<td>1.3</td>
<td>1.6</td>
<td>1.6</td>
<td>1.8</td>
<td>2.2</td>
<td></td>
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<tr>
<td>Nov</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td></td>
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<tr>
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<td>24.8</td>
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<td>30.8</td>
<td>32.2</td>
<td>35.5</td>
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</table>
Figure 3: Typical total lawn water use in inches by month for various urban areas of Washington State (Peters, 2012). Notice the drastic changes over the season!

**How Often Should I Water?**

Not every day! That is unless you are newly establishing sod or freshly seeded lawns that have very limited root zones. Watering every day encourages plant diseases, shallow roots, and is inefficient as a larger proportion of the water is lost each day to evaporation from the wet grass and soil. It is much better to water deep (water longer) and at less frequent intervals. The amount of water is chosen based on your soil as explained above, how frequently this amount of water is applied depends on the weather (Table 1 and Figure 3).

**Automatic Sprinkler Systems**

Water needs change drastically over a season. Table 1 and Figure 3 are the lawn water needs by month for various areas of Washington State on a typical year. These numbers can serve as a guideline to help adjust your automatic irrigation timer throughout the season.

Example: Someone living in Spokane that is applying one inch of water to a silt soil each time they water might irrigate twice in April (Table 1), 4 times in May and June, then go to 5 or 6 times in July, and so on throughout the year. However, this schedule would be too much water for a Seattle resident, and too little for a Kennewick resident. Obviously these irrigations should be spaced out evenly throughout the month and adjusted for rain, or warmer or cooler weather than normal. Someone with sandier soil that is applying less water each time they irrigate would need to apply roughly the same amount of total water, but apply less per irrigation event and therefore water more frequently to compensate.

A simple way to test your watering interval is to turn the automatic system off and if the lawn still looks good a few days after you would normally water, then you can save water and money by increasing the time between watering.
Dragging Hoses
For those who manually move sprinklers around the yard, a simple and efficient method is to simply avoid watering until there is visible water stress. Look for a darker green or blue color, or the grass blades will have folded or rolled leaves. Severely stressed grass will begin to look light brown or wispy (Figure 4). When water stress is noticed, then water the maximum amount for your soil (given above). This will help avoid over watering since there will be plenty of space in the soil to hold the applied water and will avoid wasted effort moving sprinklers when it is not needed. It will also encourage deep rooting grass.

<table>
<thead>
<tr>
<th>Well Watered Grass</th>
<th>Water Stressed Grass</th>
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</table>

**Figure 4.** Pictures of well-watered grass in the left-hand column, and water stressed grass in the right-hand column.

Smart Irrigation Controllers
There are new irrigation controllers available that will automatically adjust your watering to match the plant’s changing water needs based on either soil moisture sensors or weather information. These have
been shown to have the ability to keep your lawn green and result in 10-70% reductions in water bills (Dukes, 2012). They have a wide variety of modes of operation, capabilities, and therefore costs. Search for “smart irrigation controllers” on the internet to learn more.

*Irrigation Scheduler Mobile*

An app is available that estimates actual water use by your lawn and gives an idea of when to irrigate. It is available online at: [http://weather.wsu.edu/ism](http://weather.wsu.edu/ism) or can be found in iTunes or the Google Play store by searching for “irrigation scheduler mobile”. There are in-app helps for every screen.

![Figure 5. This lawn was watered deep and at infrequent intervals and has a root depth of about 16 inches.](image)

**Problem Lawns**

Some lawns are difficult to water because they are on steep slopes, they have compacted soils, clay soils, hydrophobic soils, or there is thick lawn thatch. All of these make it difficult to get water into the soil before it ponds and runs off. There are many ways to mitigate these things including dethatching,
aerating, and using surfactants or wetting agents (see additional publications below). However, many of these problems can also be managed by trying to apply water more slowly if possible. This means decreasing the water application rate to allow the soil more time to take the water in. This might require using smaller sprinkler nozzles, or using sprinklers that have lower application rates such as MP Rotator nozzle or sprinklers with large wetted radii, or possibly cycling the sprinklers (running for 10 minutes, then off for 10 minutes, then back on, etc.).

**Summary**

Try to water such that the water penetrates to about 12 inches into the soil. How much this is depends on the soil, but it is often about 1 inch of water per application for silty soils, and about ½ inch of water for sandier soils. Grass water use changes drastically over a season. Vary the time between irrigations throughout the season in response to the changing weather and season. Use Table 1 and Figure 3 as a general guide as to how often you plan to irrigate. More sophisticated home owners may wish to install a smart irrigation controller, or use the Irrigation Scheduler Mobile app to track and respond to the changing rates of actual grass water use throughout the season.

**References:**


**Additional Reading:**

Information on different turfgrasses, much more in depth on turf physiology, etc.


