

LOUISIANA HOME LAWN SERIES

A guide to maintaining a healthy Louisiana lawn



Simple Home Irrigation Audit

Description

It is important for any homeowner who waters their lawn to understand how much water they are applying. A best management practice recommended by the LSU AgCenter is to conduct a simple irrigation audit. This practice measures the volume of water applied by an irrigation system over a specific period of time. Many people just set an irrigation timer and move on with their day. While this may seem like an adequate method for keeping track of the water being applied to a lawn or landscape, it tells you very little about the actual amount of water being applied during that time. More detailed knowledge of water application empowers you to make more informed decisions to maintain healthy lawns and landscapes. A simple irrigation audit conducted at your home can help put some meaning behind time-based irrigation applications.

Conducting an irrigation audit of your sprinkler system doesn't need to be overly complicated. In fact, a simple audit is a straightforward process that anyone can handle. Whether you have a top-of-the-line in-ground system or you simply pull a hose and attach a sprinkler to irrigate, an irrigation audit ensures that sprinklers are delivering the right amount of water evenly throughout the landscape. An irrigation audit helps to quantify how much and where the water is being applied during an irrigation cycle. This information helps to reduce the occurrence of under- or overwatering, both of which can wreak havoc on the health of your turf and ornamentals.

Remember, this audit is designed to provide a general understanding of the output and uniformity of your lawn sprinkler or sprinkler system. This is designed to be user-friendly and to be completed in a time-efficient manner. This method will likely not be as precise as a professionally conducted irrigation audit; however, the data collected will provide a solid estimate of irrigation output and uniformity. To conduct a simple home irrigation audit, follow this simple step-by-step guide.

Materials Needed

Gather the materials you will need to conduct the irrigation audit. They include (Figure 1):

- **Irrigation catch cups.** These can be small, square rain gauges or aluminum cans, such as tuna cans, or catch cups with graduations specifically designed for irrigation audit use. A minimum of 12 catch cups per zone is necessary to obtain meaningful information. Remember that your results will be more accurate as you increase the number of catch cups used. Ensure that all containers are identical in dimension.
- **A timer.**
- **A rain gauge,** if the catch cups you are using are not specifically made for irrigation audits.
- **An irrigation system adjustment tool,** if necessary.



Figure 1. Collect the equipment needed for the audit, including a rain gauge or graduated cylinder, 12 or more catch cups and your phone for a timer.



Figure 2. Evenly space catch cans in a grid representing the area being irrigated by a specific sprinkler or irrigation zone. The more cans used, the more accurate the results will be.

Conduct the Audit

• Step 1 – Place Containers

Evenly space the empty containers across the area covered by your sprinkler(s) (Figure 2). This area should correspond to specific irrigation zones programmed in your system or the total area covered by your hose-end sprinkler. The greater the number of containers used, the more accurate the results of the audit will be. Try to use a minimum of 12 containers. The larger the zone being audited, the more catch cups you will need.

• Step 2 – Run Sprinklers

Turn on your sprinkler system for a predetermined length of time (Figure 2). A minimum of 15 minutes is common, but up to 30 minutes may be necessary to get an accurate picture of water volume and distribution. Use a timer or stopwatch to ensure accuracy. Make sure that this step occurs at a time with minimal wind interference (<5 mph). Strong winds can easily distort the distribution uniformity test.

• Step 3 – Measure Water Volume

After the designated time has passed, measure and record the location of the can and the volume of water that was caught in each can (Figure 3). Using a measuring stick, the depth of water in each can may be recorded. Alternatively, measuring cups from your kitchen or a rain gauge can serve as a way to measure the overall volume of water collected; however, keep in mind that transferring the water from the collection cans to either rain gauges or measuring cups may not represent the true inches or volume of water, as the dimensions are likely to be different, but that is ok! The important thing is to standardize the measuring practice and to identify differences between can volumes.



Figure 3. Pour water collected in each can into a rain gauge or measuring cup and record the volumes for every can used.

- **Step 4 – Calculate Average Depth**

Add up the depths/volumes of water in all the containers and then divide by the number of containers to find the average amount of water collected. This represents the average amount of water your sprinklers applied during the designated time.

- **Step 5 – Calculate Application Rate**

To determine how much water your sprinklers apply in inches per hour, you'll need to do a simple conversion. If your sprinklers ran for 30 minutes, multiply the average depth by 2 to get the application rate in inches per hour. For example, if your average depth is 0.25 inches in 30 minutes, your application rate is 0.5 inches per hour.

- **Step 6 – Calculate Distribution Uniformity**

Various methods exist to help determine how uniformly your sprinklers are applying irrigation. A simple, commonly used method is called lower quarter distribution uniformity. To complete this calculation, find the average irrigation volume of the lowest 25% of cans (lower quarter). Take that number and divide it by the overall average that was calculated in Step 4.

$$\text{Distribution Uniformity (DU)} = \frac{\text{Average volume of the lowest 25\% of cans}}{\text{Total average from Step 4}}$$

- **Step 7 – Adjust**

- Systems with uniformity values below 60% should be readjusted and reaudited until the uniformity is increased. In certain cases, specifically with oscillating lawn sprinklers, increasing uniformity may not be possible and will require purchasing a different lawn sprinkler altogether.
- For in-ground systems, make the necessary adjustments to your irrigation heads by replacing nozzles and/or changing the degree of head rotation to increase the overall uniformity of irrigation water distribution.
- Pay attention to the impact that wind may have. Strong gusts can push some water to one direction (and away from another direction). It is best to conduct these tests with minimal wind, but in the event that there are substantial differences between cans, this is the first place you should investigate.

References:

- Auditing home lawn irrigation systems [Fact Sheet]. University of Minnesota. <https://extension.umn.edu/lawn-care/auditing-home-lawn-irrigation-systems>
- Simple Irrigation Audit for Home Lawns in Oklahoma [Fact Sheet]. Oklahoma State University. <https://extension.ok-state.edu/fact-sheets/simple-irrigation-audit-for-home-lawns-in-oklahoma.html#:~:text=A%20simple%20irrigation%20audit%20can%20be%20used%20to,any%20homeowner%20with%20a%20basic%20knowledge%20of%20mathematics>
- Sprinkler Catch Cups Instruction Manual – Orbit Irrigation Products LLC

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