

The All Seeing All Knowing Lawn Care Manual

Your Lawn and Water

Your lawn is more than just grass. It's one of the things that makes a house a home. We walk on it, play on it, and even lie down on it to watch the clouds roll by on a summer day. It also helps the environment by trapping many pollutants before they can get into the ground water.

Imagine the perfect lawn. A green velvet carpet that's cool on your feet and springs back when you walk on it.

This can be your lawn and with less water-more than 20 percent less-than you may already be using.

We've developed a system that will let you water less and still have an attractive lawn. It will show you how to use just the right amount of water to replace moisture that is lost from the soil and grass.

We call it "EvapoTranspiration"-ET for short.

The ET method of lawn watering helps us save Nevada's most precious resource -water. ET also helps improve water quality. By watering less, you avoid runoff. Overwatering causes more water to run off than soak in. This runoff could carry pollutants from the gutter into our surface water supply.

The two key ingredients to using water efficiently are knowing how much water your sprinkler system puts on your lawn and how much water your lawn needs.

This manual explains how you can determine both, through the ET system.

By using ET, you can save water, time and money and still enjoy:

- A cool, green lawn
- Cleaner water
- The pride of knowing you are making a difference.

Turf Tip #1 Check Your Sprinklers

Good watering practices begin from the ground up, so let's start with the sprinklers.




First, check your sprinkler system. This will tell you if you're getting even water distribution. Dry, brown spots and wet, swampy areas in your lawn are the most obvious signs that there's a problem with your sprinklers.

Another sign is water constantly draining from the sprinkler system and running into the gutter. This could indicate a broken line, a plugged valve or stuck automatic drain valve.

Even a well-designed sprinkler system needs regular checkups and necessary corrections

Sprinkler Problem	Solution
Clogged sprinkler heads.	Clean sprinkler heads by removing and blowing them out. If you can't unclog them, replace them.
Broken, worn or leaking sprinkler heads.	Replace them with the same kind of sprinkler heads. This will ensure the same rate of water application. Never try to mix sprinkler head brands on the same circuit.
Crooked or tilted sprinklers.	Straighten the sprinklers to their upright positions.
Sunken sprinkler or grass growing around the heads.	Raise the sprinkler by adding a "riser" or install a taller pop-up head; or trim the grass around the head so it doesn't interfere with water distribution.
Poor overlapping spray pattern.	Check the spray pattern of the sprinklers. Each sprinkler must throw water to the adjacent sprinklers

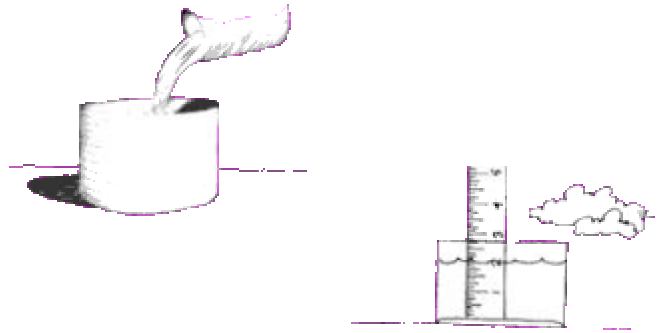
Turf Tip #2 Get to Know Your Grass

<p>Kentucky Bluegrass forms a dense, tightly-knit turf that withstands wear and has the ability to mend when damaged. The grass blades are narrow and dark green.</p>	<p>Tall Fescue is a grass with wide, coarse blades. The Turf-type Improved Tall Fescue is more desirable because it grows lower, denser, is deep rooted and has finer grass blades</p>	<p>Perennial Rye is a grass with a medium to fine texture. It is fast germinating and because of tough veins in the leaf blades, it often has a ragged appearance when mowed. It is often used in a seed mix.</p>
 <p>A detailed diagram of a Kentucky Bluegrass plant. On the left, a vertical list of parts is shown with lines pointing to the corresponding parts on the plant: Rhizome, Node, Blade, Ligule, Culm, and Culm sheath. The plant itself is shown with its dense, fibrous root system and several upright, narrow blades.</p>	 <p>A detailed diagram of a Tall Fescue plant. On the left, a vertical list of parts is shown with lines pointing to the corresponding parts on the plant: Seed, Blade, Ligule, Culm, and Culm sheath. The plant is shown with its deep, fibrous root system and several upright, wide blades.</p>	 <p>A detailed diagram of a Perennial Rye plant. On the right, a vertical list of parts is shown with lines pointing to the corresponding parts on the plant: Seed, Blade, Ligule, Culm, and Culm sheath. The plant is shown with its fibrous root system and several upright, medium-width blades.</p>

Turf Tip #3 Take the ET Test

You are now ready to take the ET test. This will determine how long and how often to water your lawn. First, you will need these items:

- 10 or more straight-sided cups or cans (We recommend coffee cups or soup cans, at least 4" to 6" deep, all with the same diameter)
- A pencil
- A ruler
- A calculator



Now, just follow these simple steps to take the ET test:

Step One: On a calm day (early morning is best), distribute the cans randomly around your front yard.

Step Two: Run the sprinklers for 15 minutes. If the water begins to puddle or run off the lawn before the 15 minutes are up, write the number of minutes the sprinkler ran before runoff occurred. If runoff occurs wait for an hour, then turn the sprinklers back on long enough to complete the 15 minutes. Record the length of time the sprinklers ran here: _____. This is the longest you can run this set of sprinklers at a time, as we'll explain on Page 9.

Pause for a moment. Note the amount of water in the cans. There should be about the same amount in each can. You may need to make some minor sprinkler adjustments, such as turning the screws in the center of a nozzle to restrict or increase the water spray. However, if the water levels are more than 50 percent different (for example, one can contains 3/4" water and another 1/4"), you might need some major repairs. If so, call in a professional.

Often an area is irrigated by a second station, and the spray pattern is needed to complete the coverage for the area. In this case, randomly place the cans over the area covered by both stations and run the water for 15 minutes for each station. Pick up the cans and continue to Step Three.

Step Three: For easier figuring, pour the water into one of the cans used in the test. it may take more than one can to collect all the water.

Step Four: Next, place these cans of water on a level surface. With your ruler, measure the depth of water in each can and record the amount. Using your calculator, add the figures and divide by the number of cans used in the test. This will determine the average inches of water your sprinkler system applied. Record the average water depth here: _____

Step Five: To determine how much and how often you need to water, check the ET charts on pages 10 and 12. For example, you have done the cup test on your lawn and your average water depth is .5 (1/2"). Look on Chart 1, (twice a week watering) and under average can depth find .5"(from Step Four). In the column directly under it, go down to where the cross column reads June. It tells you to water your lawn 22 minutes on each watering day in June. Record this number here for future reference: _____

Check the ET chart each month to make sure you're using the right amount of water on your lawn. Adjust your clock accordingly. If it rains during the week and the amount of moisture adds up to the amount you would be applying on your next watering day, skip watering that day and resume on the next watering day.

Step Six: Repeat Steps One through Five for the side yards and back yard to get the average water depths for those areas. These water depths may be different than your front yard. Record these numbers for future reference:

Side Yards: _____ Back Yard: _____

If puddling or runoff occurs before the 15 minutes used in the test, break up your watering time. For example, if your required watering time is 12 minutes but runoff begins after 6 minutes, water twice-6 minutes each cycle-one or two hours apart. Allow the water to soak in. Remember: **Water and Wait!**

If you water with a hose you still need to do a can test. Place the cans in the front yard and turn on the water for 15 minutes using the sprinkler you normally use for watering the lawn. If you have more than one setting to cover the front yard, place the sprinkler at each spot and run the water for 15 minutes for each location. Take the average from the ten cans and use the charts.

LAWN WATERING CHART 1 FOR NORTHERN NEVADA GRASSES

	AVERAGE WATER DEPTH FROM CAN TEST</DIV< TD>						
TENTHS OF INCH	.25"	.31"	.375"	.44"	.50"	.56"	.625"
FRACTION OF INCH	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"
AMOUNT NEEDED PER WEEK	MINUTES TO WATER EACH WATERING DAY (twice a week watering)</DIV< TD>						
April .98"/week	29	23	20	17	15	13	12
May 1.18"/week	35	28	24	20	18	16	14
June 1.45"/week	43	35	29	25	22	20	17
July 1.60"/week	47	38	32	28	24	22	19
August 1.50"/week	46	37	30	26	23	20	18
September 1.12"/week	34	27	23	20	17	15	13
October .96"/week	29	23	19	17	15	13	12

Minutes based on a 15 minute cup test and ET data. If runoff occurs, water more frequently. For example: Water twice for 10 minutes each instead of once for 20 minutes, allowing water to soak in between cycles.

LAWN WATERING CHART 1 FOR CARSON CITY GRASSES

	AVERAGE WATER DEPTH FROM CAN TEST						
TENTHS OF INCH	.25"	.31"	.375"	.44"	.50"	.56"	.625"
FRACTION OF INCH	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"
AMOUNT NEEDED PER WEEK	MINUTES TO WATER EACH WATERING DAY (thrice (3x) a week watering)						
April .98"/week	15	12	10	9	8	7	6
May 1.18"/week	18	14	12	10	9	8	7
June 1.45"/week	22	18	15	13	11	10	9
July 1.60"/week	24	19	16	14	12	11	10
August 1.50"/week	23	19	15	13	12	10	9
September 1.12"/week	17	14	12	10	9	8	7
October .96"/week	15	12	10	9	8	7	8

Minutes based on a 15 minute cup test and ET data. If runoff occurs, water more frequently. For example: Water twice for 10 minutes each instead of once for 20 minutes, allowing water to soak in between cycles.

Turf Tip #4 Water Early in the Morning

During the summer, water early in the morning when it's calm. Here are some reasons why:

- Less water is lost from evaporation
- Spray drift caused by wind is reduced
- Water soaks deep into the soil and is there when it's most needed- in the heat of the day

Turf Tip #5 Shape Up Your Turf

Problem #1 Thatch: If you're still experiencing water runoff or if dry spots won't go away, your lawn may have developed too much thatch. To check for thatch, take a sample of grass and soil 2" wide by 2" deep. If the spongy area between the grass and soil is more than 1/2" thick, you probably have a thatch problem. This may be due to overwatering or overfertilizing.

- To remove the thatch, use a power rake or hire a professional.
- Before dethatching, mark your sprinkler heads to avoid damaging them. Recheck your irrigation system after power raking to be sure it's still okay.

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Problem #2 Compacted Soil: Your lawn may have developed compacted soil. This soil will not allow water and nutrients to soak down to the roots. Aeration (or coring) in the spring and fall is a way to open up compacted soil and reduce water runoff. It also helps to reduce thatch buildup.

Coring is done by inserting hollow tubes-1/2" wide by 4" deep and spaced 4" to 6" apart-into the ground. Cores of soil come out of the tubes to allow water, air and fertilizer to penetrate deep into the soil.

Leave these cores on the grass- your mower will break them up and they will filter back into the soil.

Purchase a hand soil aerator (about \$20) to do the aerating or rent a coring machine from a local garden outlet. To make the job easier, have it done professionally.

Aerating and dethatching:

- Improve water penetration
- Reduce water runoff on slopes
- Increase fertilizer effectiveness
- Lessen thatch accumulation
- Help grass root growth
- Relieve compaction

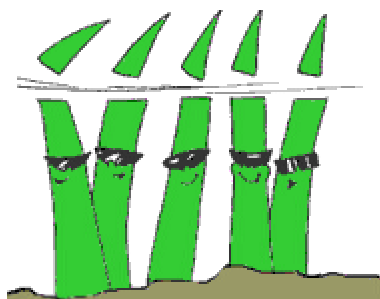
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Turf Tip #6 Fertilize Less to Save Water

You still need to fertilize your lawn but do it in the spring and autumn when it's cool to promote root growth not top growth. Reduce or even eliminate fertilization during the summer. By fertilizing less, you'll slow down grass growth and use less water.

Select a balanced, slow-release lawn fertilizer with iron and especially with potassium to build in heat and cold resistance, stimulate root growth and increase disease protection.

Follow the instructions on the package and apply only the amount needed. Water immediately after applying the fertilizer to promote quick absorption. However, avoid overwatering to prevent runoff and pollution of our water supply.



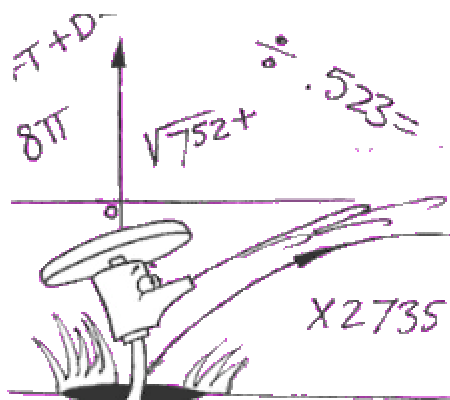
Turf Tip #7 Mow Sharp and by the Chart

Keep your mower blades sharp. Mowing with dull blades or when the grass is wet can result in a ragged-looking lawn and stressed turf.

Mowing heights affect water conservation. Mow your lawn according to the chart below. Follow the recommended height to use less water while still keeping a healthy and attractive lawn. Mow when the grass has grown one-third taller, and leave the clippings on the lawn.

Mowing Heights For Northern Nevada Grasses (In Inches)

Grass Type	Preferred Cut
Grass Type	2" - 2 1/2"
Bluegrass	2 1/2"-3"
Tall Fescue	1 1/2"-2"
Improved Fescue	1/2"
Perennial Rye;	2" - 2 1/2"



Finally, Keep an Eye on Your Lawn

This manual will help you to monitor your lawn's health with more precision. By keeping an eye on your lawn and your sprinklers, you will get a feel for the many components that go into good lawn care. ET helps you water your lawn by its need, using your sprinkler clock, calendar and scientific information to apply water right and life!

If you have any questions about the ET method or lawn care in general, just ask us. We'll be happy to help. Call: University of Nevada Cooperative Extension 784-4848 (Washoe County) or call The Water Conservation Hotline 689-5005 (Westpac)

The Scientific Facts

If you're wondering how we came up with the figures on the ET charts, they're based on a University of Nevada Cooperative Extension research project- the first study of its kind in northern Nevada.

University scientists use a weather station in the Truckee Meadows to collect the data. The station keeps track of temperature, relative humidity, solar radiation and wind speed.

The information is then fed into a computer. The results? Accurate figures that help you know just how much water to apply to your lawn at any given time during the year.

These figures are provided as a public service to homeowners and commercial turf managers to help everyone water more efficiently.

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