How Long Should I Run the Sprinklers?

Adapted from UC Pub #7497, 8044, and 21503
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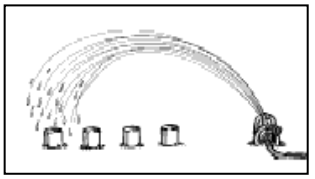

Minutes to Water: San Joaquin Valley & Foothills								
Warm-season turfgrasses					Cool-season turfgrasses			
*Minutes **per week** to irrigate if your hourly sprinkler output is:*					*Minutes **per week** to irrigate if your hourly sprinkler output is:*			
0.5 in	1.0 in	1.5 in	2.0 in		0.5 in	1.0 in	1.5 in	2.0 in
19	09	06	05	JAN	25	13	08	06
38	19	13	09	FEB	50	25	17	13
69	35	23	17	MAR	92	46	31	23
101	50	34	25	APR	134	67	45	34
132	66	44	33	MAY	176	88	59	44
164	82	55	41	JUN	218	109	73	55
170	85	57	43	JUL	227	113	76	57
145	72	48	36	AUG	193	97	64	48
113	57	38	28	SEPT	151	76	50	38
69	35	23	17	OCT	92	46	31	23
32	16	11	08	NOV	42	21	14	11
13	06	04	03	DEC	17	08	06	04

We realize that most people won't adjust their sprinkler controller on a monthly basis. We suggest SEASONAL adjustments. Average the amount of minutes needed to water for the seasons:

Spring: March, April, May

Summer: June, July, August

Fall: September, October, November

Winter: Turn off the controller December, January, February and just water on occasion.

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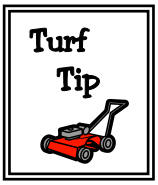
100	50	34	25	SPRING	134	67	45	34
160	80	53	40	SUMMER	213	106	71	53
71	36	24	18	FALL	95	48	32	24
turn off controller and water in spring				WINTER	turn off controller and water only on occasion			



Spring is the time to prepare the lawn for summer heat because mild temperatures favor root growth and roots supply water to leaf blades. Watering thoroughly and infrequently allows roots to develop deeper than six inches in the soil profile. **Deep roots help lawns stay vigorous in hot weather.**

Short, frequent irrigations stop root development because there is no moisture at deeper depths so roots become concentrated in the top few inches of soil. On the other extreme constantly soggy soils also stop deep roots from growing because there is no oxygen at deeper depths (and roots need air to respire and grow).

Shallow rooted lawns look terrible during summer heat spells because roots can't suck up enough water to keep pace with the heat demands of summer afternoons and hot nights. Water stress leads to dry spots followed by insect and disease attacks and weed invasion. Even when abundant amounts of water are added, the lawn never looks as good as it could.

Deep rooted lawns draw water from deeper depths and use it to stay hydrated and cool during summer heat spells. Several days can pass between irrigations and as a result they are stronger and less susceptible to root rotting fungi and weeds that thrive when lawns are irrigated daily.

Lawn Watering Guide. The following techniques will help set up timed irrigation controllers for lawns. The simple procedure involves identifying the type of turfgrass and the output of the sprinkler system. A table provides a general guideline for scheduling lawn irrigation based on average weather data. Environmental conditions vary slightly from year to year and from location to location within a region, so the irrigation controller will continue to need minor adjustments from time to time in order to deliver optimum results.

Step 1. Determine the type of lawn: COOL vs WARM Season Grasses - The majority of lawns are tall fescue or bermudagrass (common or hybrid). Tall fescue is a cool season grass that performs exceptionally well in our region in the fall and spring, but almost stops growing in the hot summer heat. Other cool season grasses are Kentucky bluegrass, annual and perennial ryegrass, and bentgrass. Warm season grasses such as common and hybrid bermuda, St. Augustine, buffalograss, and zoysiagrass thrive in the summer sun, but go dormant and stop growing during winter.

Both grass types need summer water. Cool season lawns require about 20% more water than warm season grasses, but the question remains how much?

Step 2. Determine the output of the sprinklers. To determine sprinkler output, conduct "can tests" by setting small, empty, straight-sided, equal-sized containers such as tuna or cat food cans on top of the lawn every 10 to 15 feet (or closer depending on the size of the lawn) between sprinkler heads operated by the same valve. Run the system for 20 minutes and then use a ruler to measure (in inches) the depth of water in each can. Now determine the average depth in all of the cans. Multiply the average depth by 3 to determine how many inches of water the sprinkler system applies per hour.

Conducting “can tests” regularly is also useful to determine how evenly irrigation water is distributed over the area watered under real environmental conditions and allows for sprinkler-head misalignments and other mechanical problems to be discovered and corrected. If the sprinkler system does not have head to head coverage or if winds is a constant factor, then distribution uniformity is likely to be very uneven and the range of numbers in the can test might be wide. Irrigating to the average of the cans means that some areas will receive more than enough water and other areas will not receive enough. Try to fix the irrigation system to deliver a more uniform amount of water over the entire surface.

Step 3. Determine how many minutes you need to water your lawn each week. Scientific research has accumulated data on how to water cool and warm season grasses. The amount varies based upon the climate where these lawns are grown and the included table is specific to the San Joaquin Valley region which includes foothill areas. Identify your lawn type and the current month on the table, and match that to your average sprinkler output. The value is the total number of minutes to run the sprinklers per week to provide enough water for the lawn during the current month.

Step 4. Determine irrigation frequency. In late winter or early spring start by watering once a week. As the weather heats up it may become necessary to water twice and then three times a week so divide the weekly value by two or three. Sloped areas usually need several shorter watering times to avoid runoff.

It is best to water the lawn until runoff just begins, and avoid watering each day. The number of times to water each week depends on how long the irrigation system can run before water just starts to puddle or run off the soil surface laterally. For example, if a grass needs 40 minutes of irrigation each week, but runoff begins after 20 minutes, then water twice a week for 20 minutes.

In cases where soils take up water so slowly that runoff occurs before 10 minutes, water cycling is necessary. To cycle, irrigate until runoff just begins, turn the system off, and repeat the process in 30 minutes before the soil surface dries out. Several cycles per day may be necessary to apply the desired amount of water.

Step 5. Time of day to water. The best time to water is early in the morning, when evaporation rates are lowest and water pressure is at its peak. Irrigating in the afternoon is wasteful because of higher evaporation rates, and prolonged damp conditions in the evening may encourage disease development.

Step 6. Fine tune the guidelines. Remember that irrigation requirements change from month to month. Be sure to turn your system off when rainfall is high. Unseasonably hot or windy weather may require an extra irrigation to compensate for higher water loss from the lawn. Don’t forget that poorly designed sprinkler systems and broken sprinklers need consideration or repair. Reset your sprinkler system to meet your lawn’s changing irrigation needs.