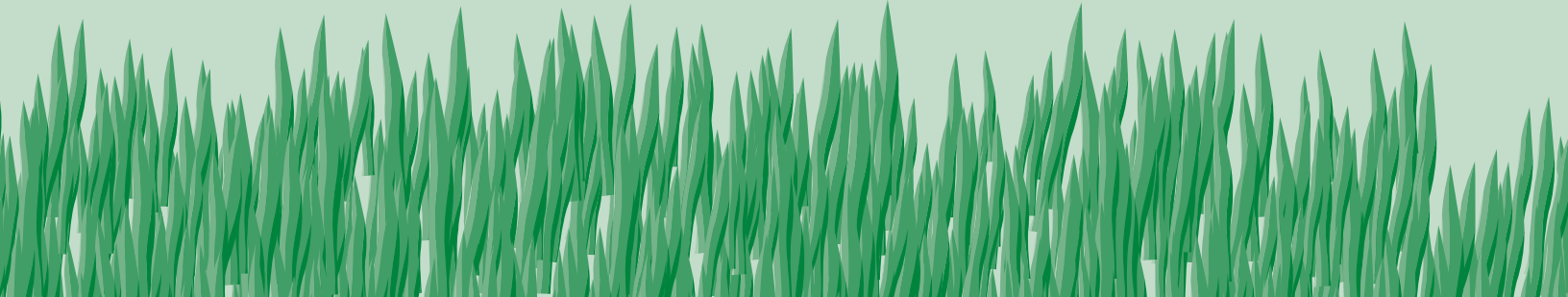


KEEP YOUR LAWN
alive
DURING DROUGHT



keep your lawn alive

during drought

James McAfee*

Homeowners know how important water is to maintaining healthy lawns. During times of drought, however, the water supply can become so depleted that some cities begin rationing programs to conserve water. You can still keep your lawn in good condition even when water is rationed.

Although rationing programs throughout the state are very similar, each water district adopts a rationing policy based on its individual situation. Following is a list of water rationing stages practiced in the different programs in Texas. Find the

stage that is most like your situation and then see the suggestions for an appropriate lawn irrigation plan.

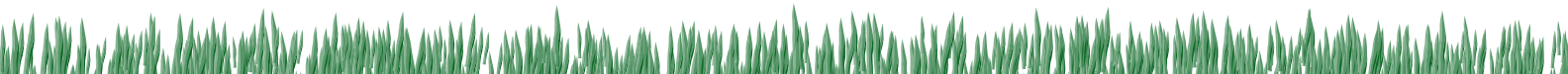
Stages of Water Rationing

Stage I

Using water for outdoor purposes, such as watering lawns and gardens or washing cars, will be restricted to one of the following:

- ***Alternate Day Use.*** Customers with even-numbered addresses may water outdoors on even-numbered days, and customers with odd-numbered addresses may water outdoors on odd-numbered days. When there are no addresses, north and west sides of streets may

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water on even-numbered days; south and east sides of streets water on odd-numbered days.

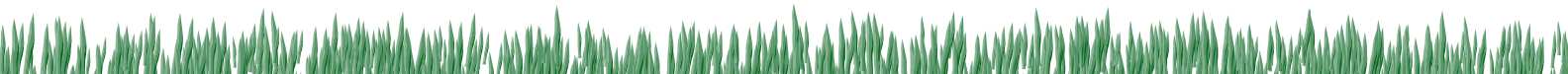
- ***Restricted Hours of Use.*** You may water outside only during periods specified by your water district.
- ***Every Five Day Use.*** Customers whose addresses end in 0 and 1 may use water outdoors on the first day of the month; 2 and 3, on the second day; 4 and 5, the third day; 6 and 7, the fourth day; 8 and 9, the fifth; 0 and 1, the sixth, etc. The water utility company generally provides a calendar noting the respective watering days for each month.

Irrigation and Management Tips Under Stage I

It is better for the overall health of a lawn to water infrequently (when drought symptoms appear) but deeply enough to wet the soil to the recommended depth. This reduces disease, helps air to move to the plant roots, and conserves water.

During designated watering times, apply enough water to wet the soil to a depth of 6 inches. Use the following steps to determine how long to water.

- Set five or six open-top cans randomly on the lawn (cans with short sides, such as tuna or cat food cans, work best).
- Turn the sprinkler or system on for 30 minutes.
- Measure and record the depth of water caught in each individual can.
- Calculate the average depth of water from all of the cans. For example, you have used five cans in your yard. The depths of water collected in the cans were as follows: 0.5 inch, 0.4 inch, 0.6 inch, 0.4 inch, and 0.6 inch. Add the depths together and then divide by the number of cans you used (five in this case).
$$0.5 \text{ inch} + 0.4 \text{ inch} + 0.6 \text{ inch} + 0.4 \text{ inch} + 0.6 \text{ inch} = 2.5 \text{ inches} \div 5 \text{ cans} = 0.5 \text{ inch of water in 30 minutes}$$
- Use a garden spade or a soil probe to determine how deeply the soil was wet during the 30-minute period. Push the probe into the soil. It will push through wet soil easily but less easily when it reaches dry soil. Measure the depth of the wet soil.



- Knowing how much water was applied in the 30-minute cycle and how deep that volume of water wet the soil, you can then determine how long the sprinkler must run to wet the soil to a depth of 6 inches.

In this example, the system put out .5 inch of water in 30 minutes, wetting the soil to a depth of 3 inches. Therefore, 1 inch of water will need to be applied to wet the soil to a depth of 6 inches, giving a total watering time of 1 hour.

3 inches wet soil = 0.5 inch of water in 30 minutes

6 inches wet soil = 1 inch of water in 1 hour

After you have adequately wet the soil, do not water again until the grass shows signs of drought stress.

Symptoms of drought stress include grass leaves turning a dull, bluish color; leaf blades rolling or folding; and footprints that remain in the grass after you walk across the lawn.

Although drought symptoms generally will develop in 5 to 7 days, symptoms may occur

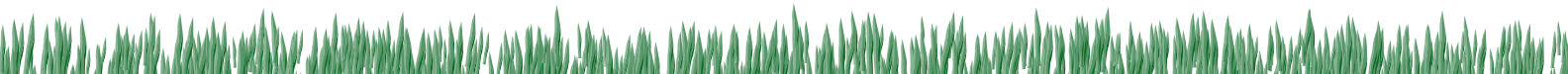
in as little as 3 days or not for 15 days. Therefore, under Stage I rationing, your grass quality should not suffer.

- In some areas of Texas, the depth of topsoil in the lawn may be less than 6 inches. If soil is less than the desired 6-inch depth, then apply only enough supplemental water to wet the existing soil profile.

Run-off can be a serious problem that wastes large amounts of water. Soil type and the application rate of the sprinkler system determine how quickly run-off will occur. If water is applied faster than it can seep into the soil, it can run off the lawn and be lost.

To Prevent Run-off

- Monitor the lawn for several irrigation cycles to spot water running onto sidewalks, streets or gutters.
- Note how long the sprinkler ran before water began to run off. Stop watering at that point to prevent water losses from run-off.
- Allow the soil surface to dry (30 minutes to 1 hour).



- Change your irrigation timer to the shorter time limit noted above and begin watering again.
- Continue this cycle until enough water has been applied to wet the soil 6 inches deep.

Other Considerations

- Mow your grass often enough to remove no more than one-third of the leaf blade at any one time.
- Reduce the amount of fertilizer applied to keep nitrogen levels low.
- If soil is compacted, aerification of the lawn will significantly improve efficiency of water moving into the soil surface.

Stage II

The use of water for outdoor purposes, such as watering lawns and gardens or washing cars, is limited to once a week and is usually based on home addresses. You may water with a hand-held hose with a manual valve only between 8:00 p.m. and 10:00 a.m.

Irrigation and Management Tips Under Stage II

Use the same approach in Stage II as was used in Stage I. If the soil is thoroughly wet to a depth of 6 inches with each watering cycle, the lawn should be able to go a week between irrigation cycles.

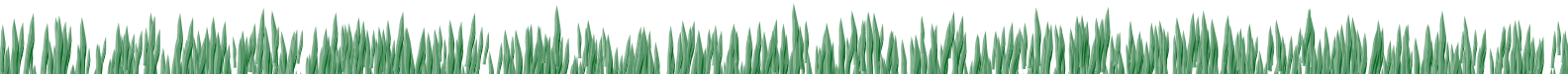
If necessary, use a hand-held hose to water areas that show drought stress symptoms before watering the whole lawn again. Make sure you thoroughly wet the soil to the appropriate depth.

Other Considerations

- Continue mowing as needed.
- Cut the amount of fertilizer applied to keep nitrogen levels low.
- Use a shower or fan type nozzle on your hose to evenly disperse the water.

Stage III

All outdoor water usage is prohibited except by hand-held hoses with manual valves for 2 to 4 hours per week.



Irrigation and Management Tips Under Stage III

Irrigation during Stage III becomes more difficult. You still need to water deeply to maintain a healthy root system. However, it is time consuming to hand-water the lawn to the depth needed. Some approaches one might adopt during Stage III of water rationing include:

- Water with a hose only those areas that are showing severe drought stress. Make sure that enough water is applied to effectively wet the soil. When puddling or run-off begins to occur, stop watering that particular area, let the surface dry and then resume watering.

Continue this cycle until the soil is wet to the appropriate depth. Use a sharp probe or spade to help determine the depth of water penetration. Do not water those areas again until drought stress symptoms reappear. This requires considerable time and daily attention.

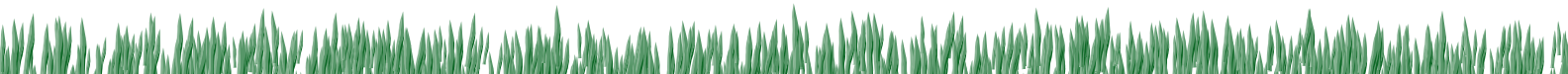
- If you do not have the time to hand-water or the yard is too large, you may want to stop watering the lawn altogether. Most warm-season turfgrass species can survive short periods of drought stress. When the grass is under

severe drought stress, it may go dormant. Dormant grass will turn brown and may appear dead.

Once watering or rain begins again, however, the grass will recover if the drought has not been too severe. Recovery may take up to 3 months during the growing season.

Grasses that can go dormant are buffalograss, *Zoysia japonica*, and bermudagrass. Other grass varieties are not as drought-tolerant, and they may die if they are deprived of water for an extended time.

- It is helpful to understand the strengths and weaknesses of your particular grass. (See Table) If the grass in your lawn goes dormant during drought, you could stop watering altogether. However, if your grass does not go dormant and must go without water for a long time, much of your lawn may die and need to be replaced.
- Use a combination of the previous two techniques. Water only high priority areas and allow other areas to go dormant or die. If you use the back yard more than the front, it would



be the high priority area. If a beautiful landscape is important to you, then the front yard might be the priority. This approach will allow you to maintain a green lawn in important areas of the yard and still save water.

Other considerations

- Continue to mow as needed, cutting no more than one-third of the leaf blade at any one time.
- Use little or no nitrogen fertilizer.
- Use a shower or fan type nozzle on your hose to help disperse the water when watering by hand.

Stage IV

All outdoor water use is prohibited. The utility may exempt watering livestock.

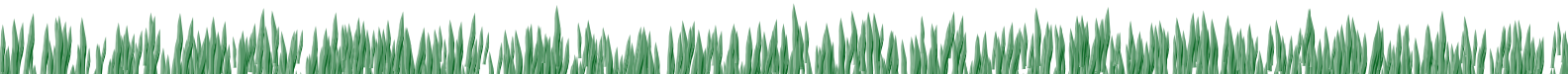
Irrigation and Management Tips Under Stage IV

You are not allowed to water during this rationing stage. Buffalograss, bermudagrass and some of the zoysia varieties will probably survive without irrigation. They will become dormant until the drought ends, at which time they should green up again.

Grass varieties such as St. Augustinegrass, centipede grass, tall fescue, and some other species may be severely damaged or die during extended periods of drought. You may have to replant dead areas after the drought ends. Contact your county Extension agent if you have any questions.

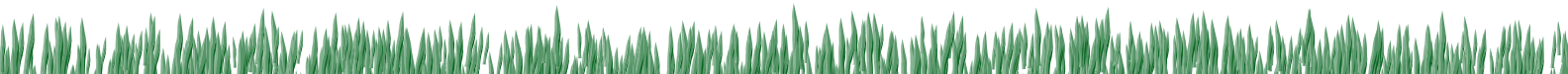
Other considerations

- Mow as needed, removing no more than one-third of the leaf blade each time.
- Stop fertilizing until drought restrictions are lifted.



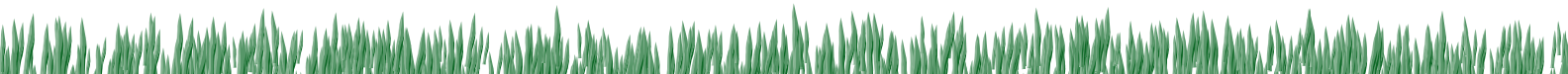
Rating for drought tolerance of turfgrasses used in home lawns.

Grass species	Level of tolerance	Comments
Buffalograss	High	Goes dormant and recovers well from drought stress.
Bermudagrass	Medium - high	Goes dormant and recovers well from drought stress.
Zoysiagrass (depends on variety)	Low - high (depends on the variety)	<i>Zoysia japonica</i> varieties such as Crowne, JaMur Palisade have high drought tolerance, while varieties like Meyer have poor drought tolerance. Most <i>Zoysia matrella</i> varieties such as Cavalier and Zeon have poor to medium drought tolerance.
St. Augustinegrass	Medium	Moderate drought resistance from an extensive, deep root system but poor ability to go dormant. Significant turfgrass loss during long drought periods. Note: The St. Augustinegrass variety Floratum has high drought tolerance but is limited to the southern portions of the state because of Floratum's poor cold tolerance.



Rating for drought tolerance of turfgrasses used in home lawns. (Continued)

Grass species	Level of tolerance	Comments
Centipedegrass	Medium	Moderate drought resistance from an extensive, deep root system but poor ability to go dormant. Significant turfgrass loss during long drought periods.
Tall fescue	Low - high	A cool-season grass. Significant turfgrass loss during long drought periods. In its area of adaptation (midwest and northern parts of U.S.), tall fescue has medium to high drought tolerance. In Texas, its drought tolerance is low to medium.



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Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Chester P. Fehlis, Deputy Director, Texas Agricultural Extension Service, The Texas A&M University System.

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