Rev. 10M 8/14/90 L-1682

Texas Agricultural Extension Service

esp Environmentally Safe Practices

LAWN WATERING

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Watering is one of the basic elements of lawn maintenance, and often one of the costliest. Homeowners in Texas estimate that nearly 30 percent of lawn maintenance costs is for watering. Thus, good water management is essential.

Factors Affecting Water Use

Soil type, grass species, turf management and water quality influence the amount of supplemental water and the watering frequency required for lawns.

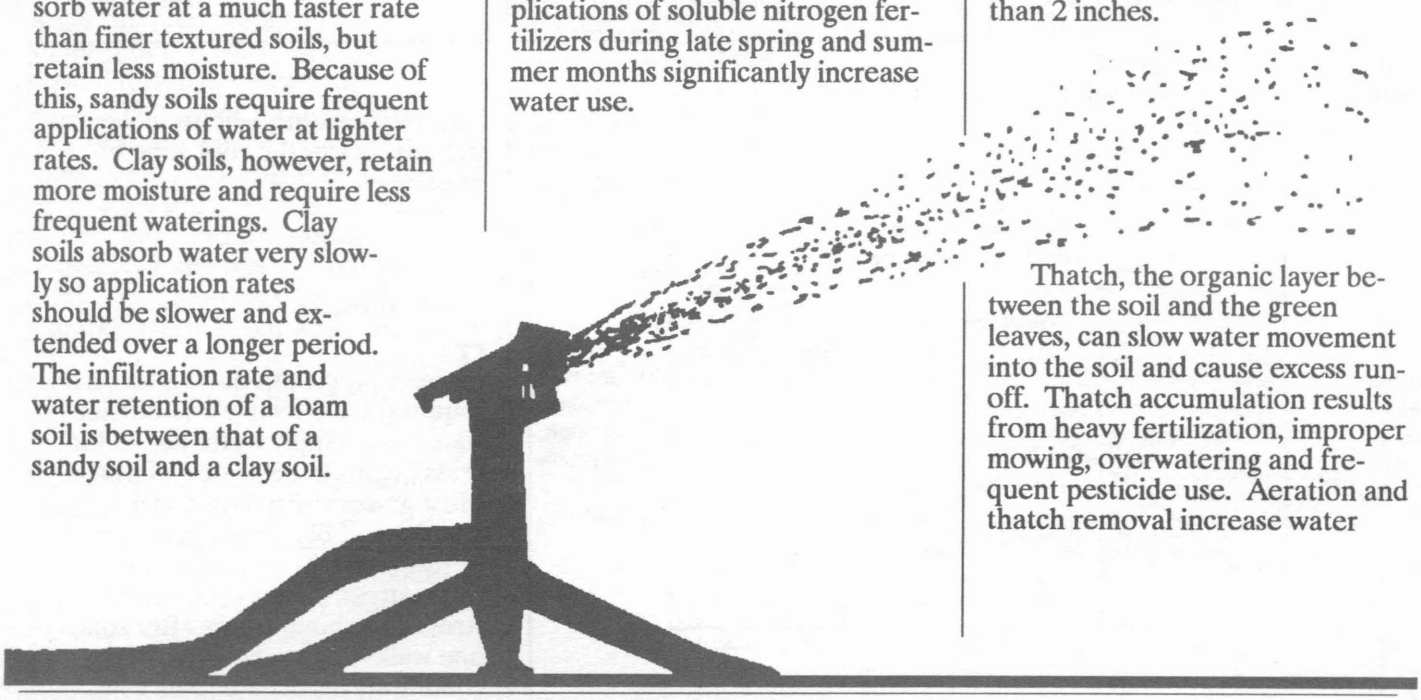
Sandy, coarse-textured soils absorb water at a much faster rate than finer textured soils, but retain less moisture. Because of this, sandy soils require frequent applications of water at lighter rates. Clay soils, however, retain more moisture and require less frequent waterings. Clay soils absorb water very slowly so application rates should be slower and extended over a longer period. The infiltration rate and water retention of a loam soil is between that of a sandy soil and a clay soil.

Grass species and management practices largely determine the amount of supplemental water required for lawns. Grasses with good drought tolerance should survive without watering. They will become straw-colored and dormant during extended dry periods. But with the first significant rainfall, or with watering, these grasses recover. Grasses with only fair or poor drought tolerance may not survive extended droughts without watering.

Management also influences the amount of water needed to maintain a healthy green lawn. Frequent fertilization and close mowing tend to increase the amount of watering required. Applications of soluble nitrogen fertilizers during late spring and summer months significantly increase water use.

Spring and fall fertilizer applications meet most grass requirements for nutrients without significantly increasing water needs. When lawns appear yellow because of iron deficiency, apply iron sulfate or iron chelate to improve color without increasing water needs.

During hot, dry conditions raise mowing heights to reduce water needs. Grass mowed at 2 to 3 inches maintains a deeper root system than grass mowed at 1 inch. Deeper roots need less supplemental water. Mow St. Augustine, bluegrass and tall fescue lawns at 3 inches during dry weather. Do not mow bermudagrass and zoysia higher than 2 inches.



Thatch, the organic layer between the soil and the green leaves, can slow water movement into the soil and cause excess runoff. Thatch accumulation results from heavy fertilization, improper mowing, overwatering and frequent pesticide use. Aeration and thatch removal increase water

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Table 1. The drought tolerance of common turfgrasses .

Excellent	Good	Fair	Poor
Buffalograss	Bermuda	St. Augustine	Tall Fescue
	Zoysia	Centipede	Kentucky Bluegrass
		Seashore Paspalum (Excalibre)	Ryegrass

penetration and reduce run-off. Under some conditions wetting agents (surfactants) improve water penetration in a heavily thatched lawn.

Water movement into the root zone is even more difficult where compaction develops. Aeration of compacted soils once or twice per year helps break up the compacted layer and increases water penetration. Aeration also reduces run-off from sloping sites.

If soil contains high levels of sodium salts, adding gypsum improves water penetration.

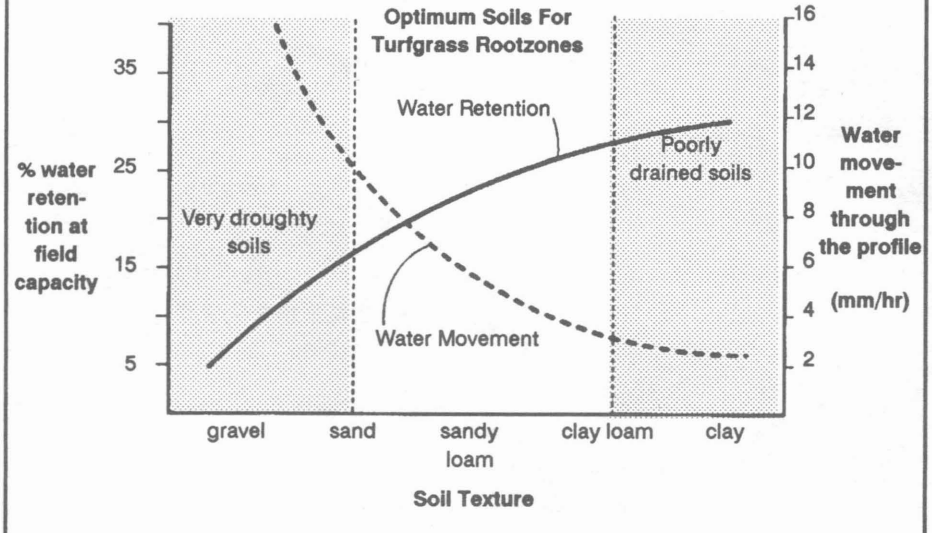


Figure 1. Influence of soil texture on water infiltration and retention.

County Extension agents can help you get your soil tested.

The quality of the water used can influence the amount needed to keep a lawn healthy. In some areas of the state water has a high salt content. If this is a problem, select a turfgrass with good salt tolerance and thoroughly wet the soil during each application. Light, frequent applications of water high in salts cause an accumulation of salts near the surface.

Table 2. The salt tolerance of common turfgrasses .

Excellent	Good	Fair	Poor
Seashore Paspalum (Excalibre)	Bermuda	St. Augustine	Buffalograss
	Zoysia		Centipede
			Tall Fescue
			Kentucky Bluegrass
			Ryegrass

Thorough watering helps move the salts below the root zone of grasses.

When to Water

Timely applications of water are required for effective and efficient water use. Apply water just as the grass begins to discolor and wilt. Most grasses turn dark and dull and the leaf blades begin to fold or roll when the grass goes into water stress. Grass under water stress also shows tracks after someone walks across the lawn. If dry conditions persist the grass wilts, then turns yellow. To time watering properly, observe that portion of the lawn that usually wilts first.

Water the entire lawn when this area shows signs of stress.

The time of day also influences the effectiveness of watering. Early morning is considered the best time to water. The wind is calm and the temperature is lower so less water is lost to evaporation. Early morning watering helps to wash dew off the leaves, which reduces the incidence of diseases. Late afternoon is considered the worst time to water because the grass remains wet through the night and is more susceptible to disease. Also, evaporation losses are highest at that time.

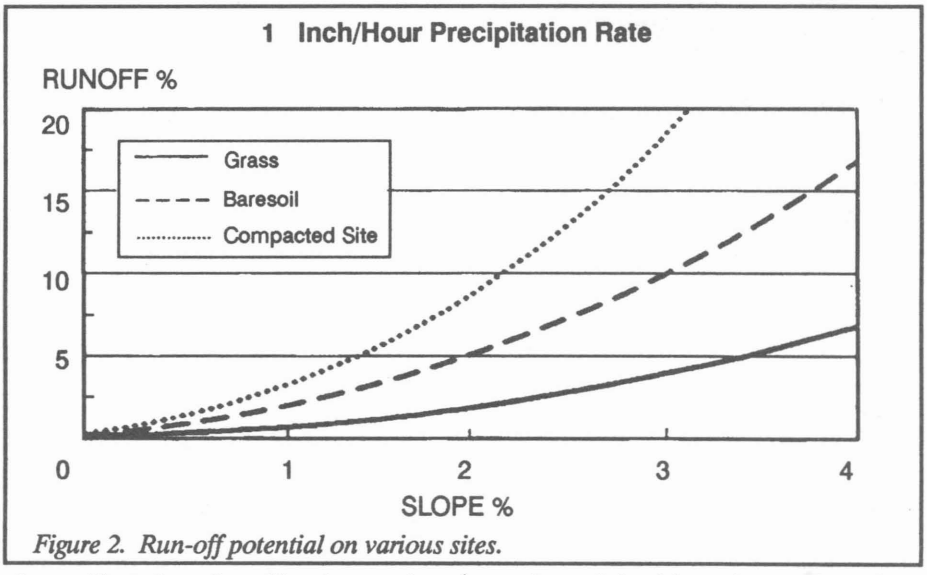


Figure 2. Run-off potential on various sites.

How Much Water

Apply enough water to a lawn to wet the top 4 to 6 inches of soil. Light, frequent applications of water produce weak, shallow-rooted turf highly susceptible to stress. The application of 1/2 to 1 inch of water will adequately wet most soil. Less water is required on a sandy soil. The time required to wet the soil to this depth depends on the type of sprinkler used, the water pressure available and the rate at which water moves into the soil. Sloping sites require light watering at frequent intervals.

Be sure water is applied uniformly to the lawn. Uneven applications result in dry spots. To check the distribution pattern of a sprinkler, place three to five empty cans of the same size in a straight line going away from a sprinkler, operate the sprinkler for awhile, then measure the amount of water in each can to determine the uniformity of application and the amount of water applied.

In some soils, especially heavy clay soils, it is difficult to water to a depth of 6 inches. Do not apply water to these soils to the point of run-off. If the sprinkler is applying water faster than the soil will absorb it, either move the sprinkler to a new location or turn it off to allow the water to soak into the soil. After the surface has dried, move the sprinkler back to the original location and apply additional water.

Repeat this procedure several times to wet the root zone thoroughly.

To determine the depth of water penetration, push a garden spade or a sharp probe into the soil. The probe will move into the soil very easily where it is moist. The probe becomes harder to push when it hits dry soil.

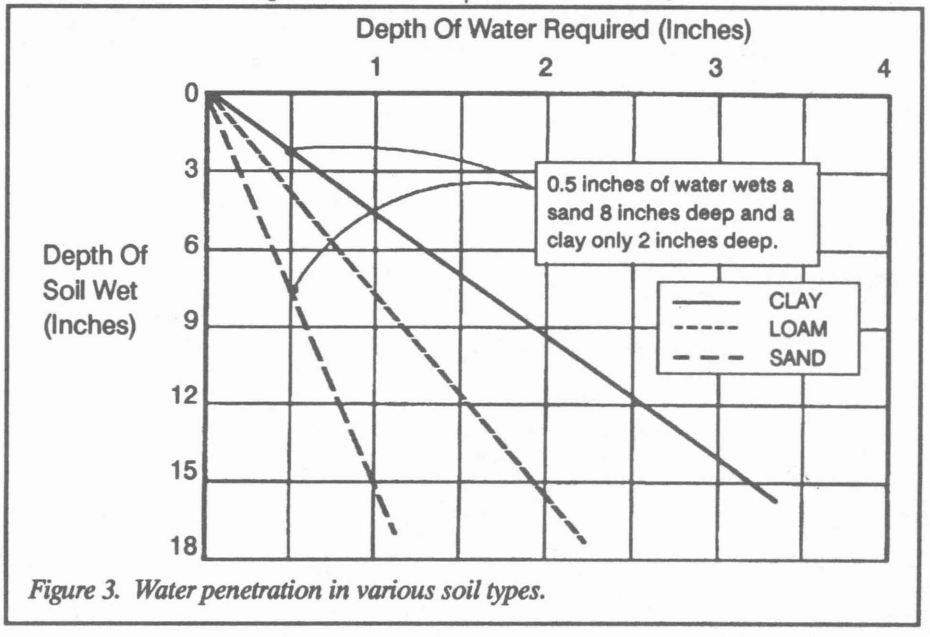
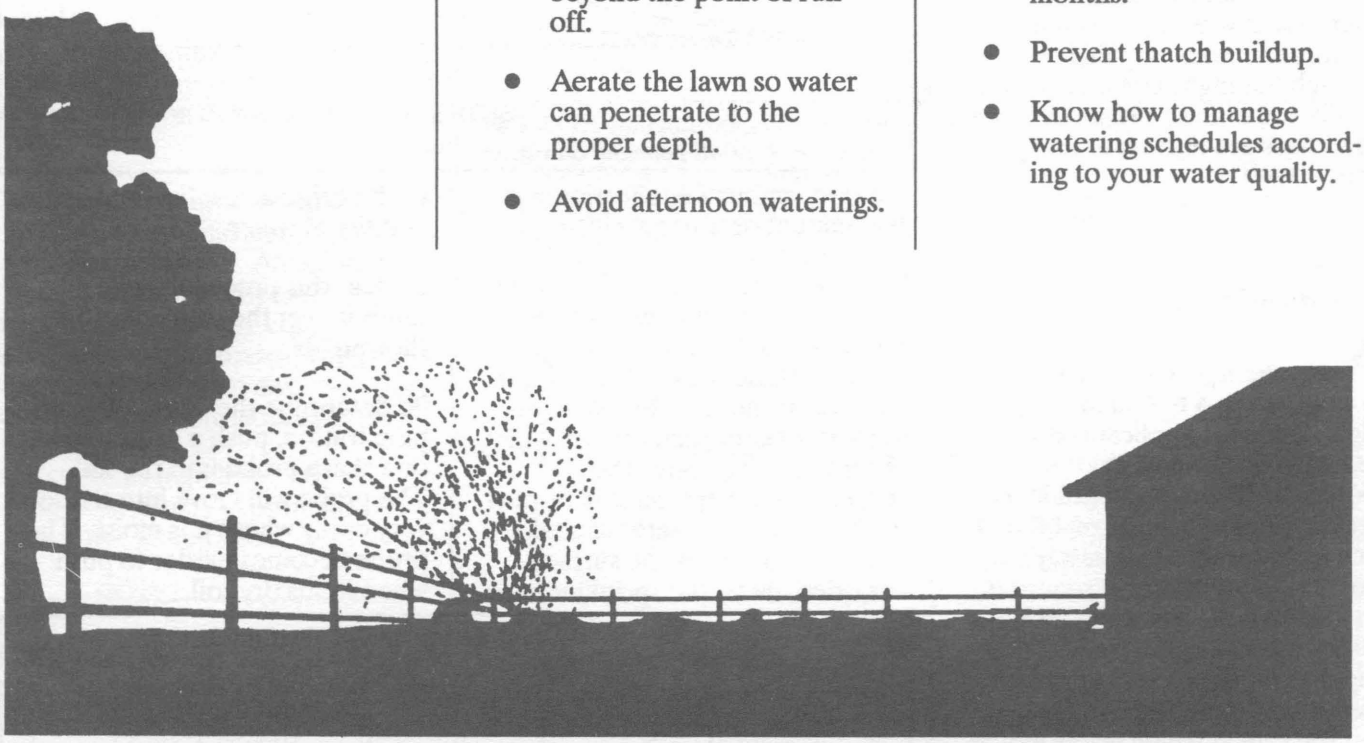


Figure 3. Water penetration in various soil types.

Summary

The key to success in watering home lawns is to condition the grass to get by on as little supplemental water as possible. Follow these simple rules for developing a deep-rooted turf which can withstand drought conditions:

- Select an adapted, drought tolerant grass.
- Water as infrequently as possible, but at the first sign of wilt.
- Apply adequate water to wet the soil 4 to 6 inches deep.
- Do not apply water beyond the point of run-off.
- Aerate the lawn so water can penetrate to the proper depth.
- Avoid afternoon waterings.
- Use a sprinkler which applies an even distribution of water at a rate of about 1/3 to 1/2 inch per hour.
- Raise mowing height 1/2 to 1 inch during summer months.
- Avoid high application rates of soluble nitrogen fertilizers during summer months.
- Prevent thatch buildup.
- Know how to manage watering schedules according to your water quality.



ESP, Environmentally Safe Practices, is a Texas Agricultural Extension Service program designed to promote the use of safe practices around the home and landscape. Whether one is working in household activities, home landscaping and gardening or in production agriculture, environmentally sound practices should be used. It is the responsibility of our generation to make wise use of environmental resources and to extend the use to future generations.

This publication was funded by the State Agricultural Soil and Water Conservation Fund.

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. Zerle L. Carpenter, Director, Texas Agricultural Extension Service, The Texas A&M University System.
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