



Using Water Efficiently in the Landscape

Because water is essential for establishing and maintaining landscape plants, gardeners should manage this resource wisely. During droughts, local officials may impose water restrictions which limit both commercial and residential water use for irrigation. Properly selected, installed and maintained landscape plants stand the best chance of survival during tough times.

New plantings

Water is the key to plant survival. Do not plant during a drought period unless you have the capacity to water regularly for the rest of the growing season. Water thoroughly after planting, then water once or twice a week, applying enough water to wet the soil to a depth of 8-12 inches for trees and shrubs or 6 inches for annuals. The amount and frequency depends on soil characteristics and, of course, the weather. An inch of water is all a sandy soil can hold in a foot of soil, but it takes 3 inches of water to bring a foot of silt textured soil to field capacity. The sandy soil stores less water and therefore needs to be watered more frequently.

A rule of thumb sometimes used for newly-planted trees is to apply one gallon of water per day per inch of trunk diameter measured 6" above the ground. It is probably easier for most people to water twice a week rather than daily. Applying ten gallons of water each time should be sufficient for a 20" - 24" root ball. As the root system establishes, reduce the irrigation frequency and enlarge the area being watered. One gallon of water per square foot of soil surface area in the root zone is a general guide to provide sufficient water once roots have grown out of the original root ball.

Plants grown by nurseries in lightweight container mixes will dry out more quickly after transplanting than the surrounding soil. Therefore container-grown plants may require more frequent irrigation than balled and burlapped material.

Group plants together according to water needs. Plants with the highest water needs are best situated near the house and water source. Perhaps an irrigation system can be installed to cover the "high water" area, while other areas of the landscape can rely on natural rainfall during most years. Drought-tolerant plants can be selected for landscaping these areas, but keep in mind that some drought-tolerant plants may not be suitable for areas that have alternating wet/dry periods.

Use smaller plants. Bigger is not always better. The water requirements of smaller plants are naturally less than for larger ones, so chances of survival during drought are greater. Smaller plants cared for properly will establish roots and recover from transplanting faster than larger plants. An established plant has adequate roots to support normal twig-growth rate for the species, and can generally go for 2-3 weeks without rain during the summer. For trees, the establishment period is one year per inches of trunk diameter, measured 6" above the ground. So while a two-inch diameter tree will be established and able to function after two years, a 4-inch tree will continue to need supplemental irrigation for another two years. Meanwhile, it's very likely that the smaller tree will actually overtake the larger one in size.

Use soil amendments properly. If amending the soil, add large quantities (2" to 4") of organic matter such as compost to the entire planting area and till it into the top 6"-8" of soil. This will increase the water holding capacity of sandy soils, and improve drainage and aeration in heavier soils. Amending individual planting holes is not as beneficial as amending the entire bed and may actually impede lateral water movement between the root ball and surrounding soil.

Use proper planting techniques. Remove all containers, even fiber pots. If roots are matted or circling the container, make three or four vertical slices an inch deep on the outside edges of the rootball. This will encourage the roots to grow out into the surrounding soil. If using balled and burlapped material, remove the top half of the wire basket, as much burlap as possible, and all of the twine or strapping material. Burlap left on the surface can wick water from the soil, and/or repel water applied from above.

Mulch liberally. Mulch can reduce evaporation from the soil surface by 70% compared to bare soil. Mulch the root zone of trees and shrubs with 2-4" of organic mulch such as shredded bark. Extend the mulch ring at least to the drip line on individual trees/shrubs. Annuals can be mulched with finer textured mulch to a depth of 1-2". Always keep mulch a few inches away from trunks and stems.

Create water basins around plants by raising a ring of soil at the outer edge of the rootball. This will help contain hose-end irrigation or rainfall in the area where fine feeder roots are developing. Filling the basin with a hose allows the water to infiltrate the soil slowly and evenly. Break the dams in the fall to prevent saturated conditions and/or ice buildup around the plant.

Use micro-irrigation. Installing drip lines or soaker hoses under the mulch of planting beds is well worth the cost and effort. All the water applied goes into the root zone, with no loss to evaporation or wind drift, so it is very efficient, as well as easy to operate. In sandy soils, make sure there is an emitter adjacent to each plant because lateral water movement is limited in these soils. Drip emitters operate at low pressure (6-30 psi) and have application rates ranging from .5 to 2.0 gallons per hour. Run the system only for the amount of time needed to wet the root zone. The most common problem with drip systems is clogging, so filtration is recommended.

Micro sprinklers or micro sprayers are low-volume irrigation emitters either installed in line or connected via spaghetti tubing to a pipe, typically a ½ - ¾" diameter flexible black poly pipe. Several laterals may feed into one main distribution pipe. The pipes can be buried, covered with mulch, or left exposed. Each sprayer can be individually placed as needed to cover 50-75% of the root zone of a tree or shrub, or one sprayer may cover several annuals or perennials. Large trees may require more than one emitter. Application rates range from 5-35 gallons per hour. When it doesn't rain, operate micro irrigation systems every 2-3 days.

Established Plantings

Prioritize water use. Concentrate on watering the plants which are most valuable and visible and least drought-tolerant. Consider adding micro irrigation systems to these important areas. If you're allowing your lawn to go dormant during a drought, provide water for established trees which normally depend on turf irrigation. Water tree root zones deeply every two weeks.

Control weeds and replenish mulch. Weeds use valuable soil moisture. Remove weeds by hand or use an approved herbicide, then renew mulch to the recommended 2"-4" depth. Don't disturb the old mulch or you will kill the feeder roots which have grown into the mulch layer. Consider enlarging mulched areas, particularly around trees.

Hold the fertilizer during a drought. Nitrogen fertilization increases the shoot-to-root ratio of woody plants, meaning that more top growth results with fewer roots to support the plants' water needs. In addition, fertilizer salts can cause root dehydration and result in leaf scorch if soil moisture is lacking. Wait until fall, or until normal rainfall patterns resume, to fertilize unless irrigation is provided. If you do fertilize, use an organic or synthetic slow-release fertilizer at a rate of 1 lb of nitrogen per 1000 square feet of fertilized area.

Delay pruning. Pruning to reduce leaf area is not a recommended strategy for coping with drought. Pruning during late spring or summer stimulates new growth, increasing the plant's water requirements. Prune deciduous plants during the dormant season instead. Remove only dead and dying plant parts during the summer.

Water wisely. If using sprinklers or hoses, water late at night or early in the morning to minimize evaporation losses. Install a rain-shutoff device on automatic irrigation systems so that you don't waste water by irrigating when it does rain. Water when plants show signs of stress - usually wilting or a color change. Annuals may require water every 2-3 days, whereas established woody plants and perennials can usually go a week or even two without water. A plant such as *Viburnum plicatum tomentosum* (doublefile viburnum), which wilts severely when soil moisture is low, can be used as an indicator plant to trigger the decision to irrigate. Water adequately when you do water, so the entire root zone is saturated.

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