



KEEPING PLANTS ALIVE DURING SEVERE DROUGHT AND WATERING RESTRICTIONS



While you might not be able to save them all, you can take precautions in your garden that will save the plants it makes sense to save, define your gardening priorities, and plan for continuing drought conditions in our Northern California Mediterranean climate. When drought conditions are prolonged, landscape plants, trees and lawns may suffer temporary or permanent damage. The information presented here is designed to help you make the right decisions for watering and managing your landscape when Mother Nature turns the spigot off.

Plants are like water pumps, drawing in moisture from the soil that is used for plant growth and releasing water from stems and leaves through a process called transpiration. Plants wilt and suffer drought stress when transpiration exceeds water uptake.

Signs of Drought Stress:

- Wilting leaves that do not improve in the evening
- Yellowing and upward curling or rolling of leaves
- Leaf, blossom, and fruit drop
- Browning or scorching of leaf margins and tips
- Under-sized and off-flavored fruits, vegetables and nuts
- Small leaves; limited shoot growth
- Interior needle and leaf drop on conifers and evergreens
- Lawn grasses that retain a footprint for several minutes

Secondary problems associated with drought:

- Spider mite infestations
- Blossom-end rot of tomatoes, peppers, squash and melons
- Attracting wildlife to feed on irrigated fruits and vegetables
- Increased damage by insects (e.g. grasshoppers) driven into home landscapes by a lack of food and water

Long-term consequences of drought:

- Increased susceptibility to sunburn and attack by insect borers
- Diminished winter hardiness
- Increased plant disease susceptibility
- Root death
- Branch and twig dieback
- Eventual plant death

Prioritize Your Plants

In terms of existing landscapes, first determine which plants in your garden are most susceptible to water stress and are of most value to you. High on your watering list might be plants that are valuable in terms of replacement cost, or that you enjoy and have prominence in the landscape. Below is

a rating system for prioritizing the water needs of typical landscape plants:

High Priority - trees and shrubs, especially those that are young and planted in an exposed site. Large, mature shade trees and shrubs.

Medium to high priority - perennials, fruit and nut trees, small fruits, groundcover, and turf that is less than one-year old.

Low priority - annual flower and herb plants, ornamental grasses, established turf, and seasonal vegetable gardens. These are relatively inexpensive and easily replaced. It may be difficult to keep large beds of annuals adequately watered during a drought.

Cultural Tips

- Mulch around plants to control weeds, conserve soil moisture and moderate soil temperatures. Organic mulches, such as bark, shredded leaves, grass clippings and straw are preferred because they improve soil structure and return nutrients to the soil upon decomposition. Apply mulches from 2 to 4 inches deep.
- Avoid using fertilizers or pesticides. Fertilizers can damage root systems under droughty conditions and pesticides may burn plant foliage.
- Resist the temptation to prune woody ornamentals, and fruit and nut trees. Some drought-stressed plants may go dormant and appear dead. Dead wood is brittle and brown under the bark and dormant wood is white or green under the bark. Wood that is obviously dead may be removed at any time.
- Keep foot and equipment traffic to a minimum on dormant turf. Turfgrass crowns become brittle during a drought and are more easily damaged by compaction.
- Keep turf at least 2 feet from the trunks of young or newly planted trees to reduce competition with the trees for water. Apply mulch in this area.
- Control weeds around shrubs, vegetables and flowers. Weeds can out-compete cultivated garden plants for water and nutrients.
- Spray plant foliage with water to reduce spider mite populations. Don't spray water on plants in the direct hot sun.
- Replace declining or dead plants with others that are hardier and drought tolerant (after the drought passes, since new plantings require regular watering).
- Leave shallow pans of fresh water out for wildlife and beneficial insects. Keep birdbaths filled with fresh, clean water.

- When possible, add organic matter to the soil on your property. This improves the soils water-holding capacity and promotes good drainage during wet weather.

Watering Tips

Water your garden in the early morning to minimize fungus diseases and water loss to evaporation.

Ornamental Trees and Shrubs: Light irrigations in spring two to three weeks apart and thorough deep irrigations a couple of weeks apart in summer will often keep these valued plants alive through summer, especially if roots are relatively deep. Most established trees and shrubs can survive relatively long periods of dry soil and stretching out the period between irrigations will keep most well-established shrubs alive through the season.

Fruit and Nut Trees: Keeping fruit and nut trees alive during severe water shortages is also possible by stretching out the interval between irrigations. If trees are stressed, fruit set may be reduced, heavier fruit drop may occur, and fruit size will be smaller. This can be partially offset by heavier fruit thinning in the spring. To produce a good crop, deciduous fruit and nut trees need adequate water in their root zones continuously from bloom until harvest. Severe stress resulting in leaf loss during summer will reduce bloom the following season and can result in sunburn of limbs and borer attacks. Citrus trees need adequate soil moisture during spring to set fruit and steady water in summer and fall to produce acceptable size, numbers, and quality of fruit.

Ground Covers: Ground covers can often survive on about half the amount of water they would receive under optimal conditions, although some dieback may occur. To avoid serious drought stress, they should be watered at least every 3 weeks from late May through September, depending on location and soil conditions.

Vegetables: Vegetables are difficult to maintain during a drought. Tomatoes, beans, and root crops such as carrots require regular watering and do not tolerate long, dry periods.

Lawns. Warm-season lawns such as bermudagrass and buffalograss are more drought tolerant than cool season grasses (e.g. tall fescue, bluegrass, and ryegrass) and may recover after several weeks of dryness once irrigated. Cool season grasses may die within a month or two of receiving no water. Signs of drought include wilted leaves and bluish-gray color followed by yellowing and eventual browning and death. Increasing the mowing height to 3 to 4 inches and cutting the length of irrigation down to half of that recommended in the UC Lawn Watering Guide (<http://anrcatalog.ucdavis.edu/pdf/8044.pdf>) and watering only once or twice a week may help get your lawn through the drought. A lawn that turns brown from drought can

often be revived with regular, thorough watering if the stress doesn't continue for too long.

Water Application Methods

For effective irrigation it is important to apply enough water to thoroughly wet the root zone: the larger the plant the larger the root zone. The root zones of trees and shrubs extend out from the trunk in an area at least equal to the height of the plant.

Water plants slowly and deeply. Apply water around the base of herbaceous plants (vegetables, flowers and herbs) so that it percolates down through the soil to the root zone.

Invest in soaker hoses and drip irrigation systems for vegetable, fruit, and flower gardens. These operate at low pressure and deliver water slowly and efficiently to the root zone helping to avoid runoff.

Recommendations for the Future

California and other parts of the US are experiencing extreme drought conditions. Ten of the last twelve years have been dry and our future looks bleak for abundant rainfall in future rainy seasons. We are recommending that now is the time to engage in some long term planning for your garden that takes declining water availability into account. *Severe drought principles indicate that you should:*

- Apply mulch, mulch, and more mulch. The use of organic mulch (such as wood, bark chips, leaves, and lawn clippings) can reduce irrigation needs by as **much as 50%**. The larger the mulch particle, the thicker it should be applied.
- If it's not used for play, replace some or all of your turfgrass with native and drought resistant plants.
- Replace your drought damaged plants with native and drought resistant plants.
- Maintain water efficient and drought resistant plantings in other parts of your landscape.
- Install "manufactured shade" (i.e. floating row covers, latticed pergolas, canopies, etc) in your yard to reduce evaporation and transpiration from stressed plants.

For further information or to speak to a Master Gardener, contact UC Cooperative Extension at (530) 538-7201.

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