



Sonoma County Master Gardener Guidelines for Managing Drought in the Urban Landscape

1. Irrigation Systems and Management

- Check, adjust, and repair pipes, valves, and sprinkler heads to make sure there are no leaks and no water is being wasted.
 - Replace worn out irrigation system components and consider upgrading systems that are over 10 years old with new, higher efficiency components.
- Convert sprinkler or bubbler heads to drip irrigation wherever possible.
- Hydrozone -- group plants with the same water needs onto the same valve or line.
- Move drip emitters away from the crowns, out to the dripline for trees and shrubs that have grown since the original irrigation was installed.
- Irrigate in the early morning, between the hours of 2am – 7am, when there is no wind and little evaporation.
- Know your soil type and water to match the infiltration rate your soil to avoid runoff. Irrigate more frequently with shorter runtimes for sandy soil, so that water is not wasted below the rooting depth. Irrigate less frequently but with longer runtimes for loam and clay soils.
 - On slopes and areas with compacted soils, avoid water runoff by using multiple (cycled) start times (also called pulse irrigation) to allow water to soak in slowly.
 - Adjust spray heads so that no water runs off onto sidewalks or into the street.
- Water as little as possible!
 - Operate your controller manually. Check soil moisture (dig down or use a moisture meter) and water only when the soil is dry.
 - If using an automated controller, check Santa Rosa City 'Turf Time' (santarosa.gov/turftime) weekly for suggested sprinkler and drip run times.
 - Adjust irrigation frequency and runtimes down gradually, to water plants as little as possible to keep them alive. Get used to plants that don't look perfect.
 - Consider upgrading the irrigation controller to a 'smart' controller, which automatically calculates seasonal setbacks.

2. Prioritize Your Plants

- Determine which plants are susceptible to drought stress. When prioritizing what to keep and what to let go, consider replacement costs, prominence in the landscape, and the length of time for plants to reach maturity.+
- Be aware there may be NO landscape watering allowed if conservation measures are inadequate. Consider letting go of high water use plants (even those that are high priority), and replacing them later with more drought tolerant plants.
- High priority plants are usually trees, shrubs, and fruit and nut trees – that provide shade, are expensive to replace, and take a long time to mature.
 - Those that have not yet reached mature size will require the most irrigation

- Medium priority plants are groundcovers, perennials (edibles, herbs, and flowers), and vines that grow quickly and are usually inexpensive to replace.
- Low priority plants are annual vegetables, herbs, ornamentals, and lawns – they are the least expensive to replace and reach maturity in a season.
 - The lowest priority should be given to lawns, which use a lot of water and are not sustainable in summer dry climates like ours.

3. Ornamental Plants

- Hold off on planting anything new until the fall, to take advantage of cool temperatures and fall & winter rains (hopefully), since all new plants require a steady supply of moisture for 1-2 years.
- Water deeply every 3 to 4 weeks through fall and winter if there is no rain, to maintain plant reserves and the plants' ability to handle drought stress during the summer.
- Remove medium and low priority plants from planting beds if they will compete with high priority plants for soil moisture.
- Keep beds weed-free, as weeds will out-compete plants for soil moisture.
- Remove any turf within the canopy of trees, and replace with 4" of mulch.
- Add compost to planting beds – it acts like a sponge, holding moisture until plants need it.
- Mulch heavily (3-4 inches) to prevent weed germination and evaporation from the soil surface. Keep mulch at least 2" from the base of all plants and 6" from tree trunks.
- Avoid fertilizing and dormant pruning, since both will stimulate heavy top growth that will require additional water to support.
 - Spring and summer prune (April through July) plants that are too big or have excess foliage. This will lower water demand without stimulating a lot of new growth.
- Restrict traffic over the root zone of trees and shrubs.
- If dieback occurs, prune out deadwood.
- Over-irrigation is very common! Most established trees and shrubs can survive on 20 to 40 percent less irrigation than is normally given. Gradually reduce by no more than 10% at a time over several weeks to allow plants to adjust to less water.
 - Thereafter, a few deep, thorough irrigations spaced several weeks apart will keep most trees and shrubs alive through the summer. Many species will drop leaves/wilt when drought stressed, but will survive. Fruit size will be reduced and future production will be limited, but will return to normal over time once adequate irrigation is resumed.

4. Edible Plants

- If edibles are your top priority, see 'Food Gardening with Less Water'.

5. Lawns

- Consider getting rid of some or all of your lawn by sheet-mulching those areas, converting the sprinklers to drip, and installing paths, patios, etc. Wait until fall to plant with low water use plants.

- Lawns with drought stress retain footprints for several minutes after being walked on, and will have a bluish-gray appearance. Leaves will turn yellow, then brown, indicating dormancy. A recently dormant lawn can usually be revived with regular, deep watering; most turf grasses can survive in a dormant condition for 3 to 6 weeks (depending on soil moisture and temperatures). If the dormant period is lengthy, a ½ inch of water applied once every 2-3 weeks will keep the crowns and roots hydrated (but will not re-green the lawn) through the dormant period.
- Determine what type of lawn you have:
 - Warm-season lawns planted in bermuda grass, buffalo grass, zoysia, or St. Augustine grass are more drought tolerant than cool-season grasses.
 - Lawns composed of cool-season grasses such as tall fescue, bluegrass, and perennial ryegrass will withstand drought conditions unless they are newly seeded or sodded. They naturally slow down their growth in summer and resume growth in the cooler months. Tall fescue is the most commonly used lawn grass in California, and has excellent tolerance for heat stress and drought.
- Increase the mowing height to 3" so that grass blades shade the soil, keeping soil temperatures cooler and reducing evaporation.
- Dethatch to allow better water penetration.
- Know your soil type and set irrigation times accordingly.
- Most lawns can survive on 25% - 50% less irrigation than they are normally given, provided they are watered deeply once or twice per week. Use several short cycles to avoid runoff and allow deep soakings; watering deeply encourages deep rooting and enhances drought tolerance.
- If uneven sprinkler coverage leads to some brown areas in the lawn, hand water those areas rather than increasing the irrigation frequency or length.
- Keep foot and equipment traffic to a minimum on dormant turf, as the crowns become brittle during drought and are easily damaged.

6. Signs of Drought Stress

- Plants are like water pumps, drawing in moisture from the soil to use for plant growth, then releasing water from the stems and leaves through a process called transpiration. Plants begin to wilt and suffer drought stress when the transpiration rate exceeds water uptake. Plants require the most irrigation in June and July when day length is longest. In August and September water needs begin to diminish as the days become shorter, despite temperatures that may remain largely the same. Dry winds also contribute significantly to drought stress, and may occur at any time of the year.
- Primary signs of drought stress:
 - Wilting or drooping leaves that do not return to normal after the sun goes down
 - Upward curling or rolling of leaves
 - Yellowing and browning of leaves, especially along leaf margins and tips, or foliage that becomes grayish and loses its luster
 - Under-sized leaves and limited shoot growth
 - Blossom and fruit drop

- Under-sized and off-flavored fruits, nuts, and vegetables
- Interior needle browning and leaf drop on conifers and evergreens
- Iron chlorosis symptoms on foliage (leaf yellowing between veins)
- Secondary signs of drought stress:
 - Spider mite infestations
 - Increased damage by insects driven into home landscapes by lack of food and water
 - Increased feeding on landscape plants by wildlife
- Long-term consequences of drought:
 - Increased susceptibility to plant diseases and attack by insect borers
 - Root death
 - Diminished winter hardiness
 - Terminal die-back; dead twigs and branches
 - Eventual plant death

7. Additional Drought Tips

- Do not wash your car at home – go to a commercial carwash where the water is recycled.
- Use a broom instead of the hose to clean off sidewalks, etc.
- Teach your children that the hose is not a toy!
- Use buckets to capture water in sinks and tubs while waiting for the water to get warm, then use it to irrigate landscaping.
- Consider installing a gray water system and/or a rainwater catchment system for irrigation use.
- Consider installing a rain garden to capture and direct rainwater for deep soil infiltration.