

Watering a Home Landscape During Drought

Fact Sheet No. 7.240

Gardening Series | Basics

by J.Klett and D. Buelow*

Colorado's semiarid climate, which is prone to periods of drought, requires that homeowners and land managers care for their landscapes in a responsible water-wise manner. A drought, described as a prolonged period of time of below-average precipitation for a given area, is a serious health threat to new and existing landscapes and plants. Water is a scarce and limited resource in Colorado, and landscapes are expensive and time consuming to replace; therefore, it is critical to prepare for and practice water saving measures to maintain new and existing landscapes during drought.

Healthy landscapes featuring trees, shrubs, flowers, gardens and lawns improve the quality of life and the environment. Landscaping:

- Increases the value of our homes and businesses aesthetically and monetarily.
- Improves air and water quality.
- Reduces home heating and cooling costs.
- Decreases carbon dioxide greenhouse gases.
- Provides noise abatement screening.
- Supplies wildlife with food and shelter.

Due to Colorado's high intensity sunlight, low humidity, temperature extremes, windy conditions, and challenging soil characteristics, growing and maintaining a healthy landscape in Colorado can be difficult even when drought conditions are not present. A common watering misconception, given Colorado's growing environment and recurring periods of drought, is to over water the landscape and not to conserve water. To create a natural, attractive, and water efficient landscape focused on maximizing water conservation and minimizing water waste,

practice the seven key Xeriscape® principles (see CSU Extension fact sheet [7.228: Xeriscaping: Creative Landscaping](#)).

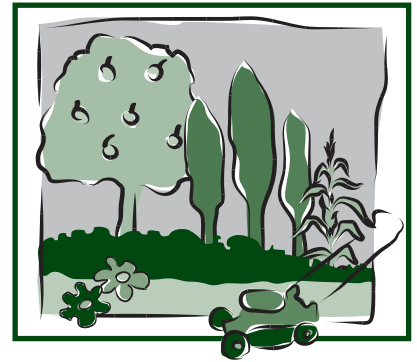
Water Wisely and Efficiently

During periods of drought practice water conservation guidelines:

- Always check with your local water provider for the latest drought information and water use rules and regulations.
- Hand watering of trees, shrubs, perennials, annuals and vegetable gardens may occur on any day.
- Water between 6 p.m. and 10 a.m.
- Irrigate plant materials only, not hardscapes.
- Do not irrigate during rainfall or high wind.
- Apply irrigation at lower rates to avoid excess water runoff and waste.
- Drought tolerant plants are not drought tolerant until their roots are established in the soil.

Recognize the water requirements of the plants in your landscape and use only the water that they need. To achieve maximum water efficiency, it is beneficial to understand your soil's texture and moisture content, the current season, and your irrigation system's precipitation output.

Prior to each irrigation check how much moisture is present in the soil. It is important to assess the moisture in the soil because clay soils, which are common to Colorado, hold moisture for long periods of time after they become water saturated. Although the surface of a clay soil may appear dry and brittle, beneath the surface the soil may be water logged and deficient of oxygen needed for plant root growth. Irrigating a soil that is water logged will result in excess water runoff, water pools, and water puddles. To minimize water waste during the irrigation of a clay soil, cycle irrigation run times for 5 minutes on then 5 minutes off to allow



Quick Facts

- Follow all water rules and regulations of your local water provider.
- Use only the water that is needed.
- Water between 6 p.m. and 10 a.m.
- Design landscapes with water-wise plants.
- Utilize mulch to reduce soil surface water evaporation.
- New planted trees require priority water needs.
- Do not water hardscapes.
- Do not water on windy or rainy days.

*J. Klett, Colorado State University Extension landscape horticulturist and professor, department of horticulture and landscape architecture; D. Buelow, undergraduate, environmental horticulture major. 04/2013.



for absorption of water deep into the soil. Water drains quickly from sandy soils and may result in the need for sandy soils to receive more frequent irrigations.

One technique to assess soil moisture is to use a 6-inch screwdriver to probe the soil. If the screwdriver inserts into the soil easily, water is often not required. Be aware that sandy soils generally do not exhibit high resistance to penetration and may need water even if screwdriver insertion is effortless. Another method to measure the soil's moisture level is to use a standard indoor/outdoor moisture meter. Keep in mind, however, that soils high in organic matter will typically result in a higher moisture reading even though not all of the moisture may be available to the plant.

Analyze your irrigation system output to determine how much water your landscape receives during each irrigation cycle and appropriately set your irrigation clock. To measure the water output of each cycle, place shallow, stable containers in various spots throughout the irrigated area. Next, run the sprinklers for a known set amount of time. Afterwards measure the depth of water in each container to calculate the precipitation rate. Use this calculation to determine how long you need to water to achieve the proper irrigation amount (see CSU Extension fact sheet no. [7.239: Operating and Maintaining a Home Irrigation System](#)).

Prioritizing Watering Needs

Top water priority is required for young or newly transplanted trees (1 to 4 inch diameter) that have a limited root system. Supplemental irrigation is needed for these trees even when drought conditions do not exist. Establishment of newly transplanted trees in Colorado's climate requires a minimum of one year per inch of trunk diameter. Trees grown in environments where their root zone is restricted or compromised, such as those in sidewalk planters, near streets, and near construction sites require additional observation and care.

Trees

Trees take a lot of money, resources, and years to replace; therefore, trees should receive the greatest water considerations during drought. A tree's water absorbing roots are primarily located in the top

12 inches of the soil. Apply water at an appropriate rate that allows water to soak slowly into the soil to a depth of 12 inches. Water is best applied by hand with a deep-root fork or needle, soaker hose, or soft spray wand. For use of a deep-root watering fork insert the needle into the soil to a depth of 8 inches or less and apply water at numerous sites throughout the critical root zone. This zone is found located within the dripline of the tree.

During drought, trees grown in sites without lawn irrigation need 10 gallons of water each week per inch of trunk diameter measured. The trunk diameter measurement should be taken at 6 inches above the soil for a 1 to 4 inch diameter tree and at 12 inches above the soil for a tree with a diameter greater than 4 inches. A 2-inch diameter tree, therefore, requires 20 gallons of water per week.

During the spring and summer months from May through September, water established trees weekly to two times per month depending on water restrictions, tree size and growth phase, weather, temperature, and soil conditions.

During the fall and winter months from October through April, water established trees one to two times per month and only when the air temperature is above 40 degrees F and the soil is not frozen. Apply water midday to allow water to soak into the soil before freezing at night. Check with your local water provider for days of the week when you are allowed to irrigate (see CSU Extension fact sheet no. [7.211: Fall and Winter Watering](#)).

Do not fertilize trees that are not root established in the soil or that are drought stressed. Fertilizer salts exacerbate stress when soil moisture is not available and may result in burned roots. Nutrients require a considerable amount of energy from the tree to capture and will result in further stress to the tree.

To conserve soil moisture and reduce water evaporation from the soil surface, apply mulch to a depth of 3 to 4 inches and up to 2 to 4 feet from the base of the trunk or to the dripline of the tree if this distance is shorter. Do not allow mulch to contact the trunk of the tree. Mulch that contacts the trunk directly increases the tree's vulnerability to pests and diseases and may cause rot of the trunk tissues over time by keeping the tissues too wet. Mulch volcanoes and areas where mulch is applied to a depth greater than 4 inches interfere

with the oxygen gas exchange between the soil and atmosphere and reduces the amount of moisture that reaches the roots.

Flower Gardens

Prepare the soil prior to planting. To maximize water efficiency and plant growth, place 1 to 2 inches of organic matter or compost on the soil surface and till into the soil to a depth of 12 inches. Select and group plants together that have similar water and sunlight requirements. Before irrigation, check soil moisture. Newly planted flowers may need water daily for the first two weeks following the planting date. Irrigate between 6 p.m. and 10 a.m. Water may be applied using a hand-held hose or a low-volume nonspray irrigation device such as drip irrigation.

Spread mulch, 1 to 2 inches deep on the soil surface between and around plants to reduce water evaporation and prevent weeds.

Vegetable Gardens

Amend the soil with organic matter before planting. Become familiar with specific critical watering periods for each of your vegetable crops. Vegetable quality and yield is directly correlated to the amount of water supplied during the growing season at critical watering periods. Typically water is most critical during the first few weeks of plant development, directly after transplanting and during flowering and fruit production. Vegetables cannot revert to dormancy to avoid drought stress; therefore, it is important not to underwater. Do not over water vegetables since they may rot.

To prevent over watering issues check the soil moisture daily before irrigation with a screwdriver as described earlier. Water by hand or use a drip, trickle, or soaker hose system. Apply irrigation during the coolness of morning before 10 a.m. Mulch garden area with organic matter such as grass clippings to depths of 3 inches or less on the soil surface to reduce water evaporation.

Fruit Gardens

Water fruit trees as described for trees. Utilize mulch around grapes, strawberries, and raspberries. Remember to avoid direct mulch to stem contact. Apply water

by hand or use drip irrigation system technology to apply water directly to plant roots (see CSU Extension fact sheet no. [4.702: Drip Irrigation for Home Gardens](#)).

Watering the Lawn

Understand and follow all current water rules and regulations encouraged or mandated by your local water provider. Local restrictions may specify irrigation days, times, and amounts depending on the season and the severity of drought.

When you first turn on your irrigation system in the spring, inspect all system components to verify they are in appropriate working condition. Check the automatic timer or clock and all sprinkler heads, valves, sensors, gauges, filters, mainlines and tubing if applicable. Test the system and monitor for proper sprinkler head overlap, coverage, operation, and precipitation amount (see CSU Extension fact sheet no. [4.722: Irrigation: Inspecting and Correcting Turf Irrigation System Problems](#)).

During the growing season, after each lawn mowing, inspect irrigation heads and system to ensure that all components remain accurately aligned and no damages have occurred during the mowing operations. Keep grass cut shorter directly around irrigation heads to prevent spray blockage. Monitor the irrigation system for any leaks and repair damages within 10 days.

Irrigate the lawn in spring as early as weather permits. Identify the prominent grass species in your lawn to better understand irrigation, mowing, and fertilization requirements. Develop a suitable watering schedule for each zone. Program the irrigation clock to provide the correct amount of water to each zone that minimizes water waste.

For situations that involve a sloped lawn, a soil with compaction issues, or a soil with high clay content, utilize a cycle and soak irrigation approach to avoid excess water runoff and puddles. This method requires an increase in the number of cycles per irrigation but a reduction in the duration of run time per cycle. Instead of programming for one irrigation cycle per day to run for 15 minutes, program for three irrigation cycles to run for 5 minutes each per cycle. An irrigation program of 5 minutes on then 5 minutes off allows for the water to be absorbed by the grass roots and slowly penetrate deep into the soil.

On irrigation days apply a total of $\frac{3}{4}$ to 1 inch of water. Set control clocks to water between 6 p.m. and 10 a.m. and check that the irrigation system's rain sensor is in accurate working condition. Do not spray on concrete and asphalt or allow water to collect in gutters, streets and alleys. Only water areas in your lawn that are dry. Hand water isolated dry spots where sprinklers do not overlap. Utilize wetting agents designed for turf to temporarily assist with water infiltration into the soil.

Lawns—January to June Care

Aerate the lawn in spring to reduce the thatch layer and provide grass roots optimal oxygen levels. Apply pre-emergent herbicides in early spring to prevent germination of weedy grass species such as crabgrass and foxtail. Fertilize once or twice between March and June with a balanced or complete fertilizer. Each grass species has a different fertilizer requirement and, therefore, performs best under a specific fertilizer schedule. Do not under or over fertilize the lawn. Over fertilization results in the need for additional lawn irrigation

and mowing, increases thatch buildup and may contaminate groundwater through excessive nutrient leaching (see CSU Extension fact sheet no. [7.202: Lawn Care](#)).

Set mower height at 2 $\frac{1}{2}$ to 3 inches and mow at the same height all season. Make sure not to remove more than $\frac{3}{4}$ inch of the grass blades during any single mowing. Recycle grass clippings into the lawn when mowing. Grass clippings help nourish the lawn and may reduce the need for nitrogen fertilization by up to $\frac{1}{3}$. Clippings do not increase the thatch layer. For summer and fall lawn watering tips follow your water provider rules and regulations.

For more information on lawn watering and care recommendations visit:

- <http://csuturf.colostate.edu>

For more drought information and tips visit the following web sites:

- www.ext.colostate.edu
- www.greenco.org
- www.planttalk.org