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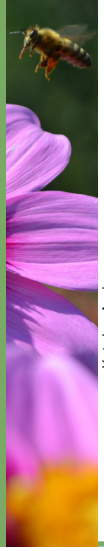

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YARD AND GARDEN

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Yard and Garden Water Management

By Cheryl Moore-Gough, Extension Horticulture Specialist

This publication lists efficient water management tips that benefit plants as well as your water budget.

A WELL-MAINTAINED LAWN AND GARDEN ARE something to be proud of; properly planned and maintained, they can be eye-catching parts of the landscape. Healthy, attractive landscaping helps visually tie the property together, and improves homeowners' living environment. On hot, sunny days, lawns and gardens reduce sun glare, keep surrounding areas cooler, and attract birds and other wildlife. On windy and rainy days, lawns and gardens protect homeowners' property from erosion and soil loss.

In the semi-arid west, irrigation is often an important element in maintaining home landscapes. However, improper household lawn and garden irrigation uses millions of gallons of water each year. In addition, increasing demands on water resources are putting added focus on water conservation and management.

This guide outlines some lawn and garden Best Management Practices (BMPs) to help minimize water use while maximizing lawn and garden production and aesthetics.

Go Native

Landscaping with native plants makes good sense while saving a few dollars. Native vegetation is a useful alternative to landscapes featuring exotic introduced species. Native vegetation is generally easy to maintain because native species have adapted to the regional climate; they are hardy; they can tolerate less than optimum soil and moisture conditions; and they are less susceptible to pests and diseases - all good things for conservation. TIP: Not all native species have the same preferences for growing conditions; each plant species has defined water requirements and preferred site-specific conditions such as light and soil. Some native species, such as aspen (*Populus tremuloides*) and golden currant (*Ribes aureum*), flourish in low-lying areas where water collects, while others like serviceberry (*Amelanchier* spp.) thrive where it's hot and dry. If a native species cannot be found, look for introduced species that are well-suited to the area, particularly those that can tolerate summers without extra water.

Know Soils' Water-holding Capacity

The ability of a soil to store water is called water-holding capacity. Soil water-holding capacity is primarily controlled by soil texture (the amount of sand, silt and clay) and organic matter. Fine textured soils (more silt and clay) have a greater number of small spaces between soil particles than coarser, sandier soils. These pore spaces are what allow fine textured soils to hold more water than coarse textured soils. Organic matter holds and stores water, much like fine soil, and also insulates soil against heating and cooling.

Knowing about soil properties is important for effective water management. Clay soils have different water-holding capacities and watering needs than sandy soils, which are different from loamy soils. See the MontGuide Home Garden Soil Testing and Fertilizer Guidelines (MT200705AG) to get information on obtaining a soil test and/or getting a soil report.

Clay soil: clay soils absorb water very slowly, so apply water only as fast as it is absorbed by the soil. TIP: Till or spade soil to help loosen the soil and add organic material such as compost or peat moss. Keep the soil surface rough and covered with some type of mulch. This will make it easier for water to enter the soil.

Sandy soil: water can drain through sandy soils so quickly plants won't be able to absorb it. TIP: Add organic material to increase water-holding capacity of sandy soil. Keep the soil covered with some type of mulch to minimize drying caused by evaporation. This will help water remain longer in sandy soil.

Loam soil: this soil is a combination of sand, silt, and clay. Loam absorbs water readily and stores it for easy plant use.

Water Management and Conservation

Different types of soil have different water management requirements. Overwatering can water-log some soils and cause excessive runoff, root rot problems and nitrate fertilizer loss. Overwatering can also be costly and can deplete water supplies. Some soils (sands and loams) can absorb abundant amounts of water before runoff occurs. Others (clays) absorb water more slowly and can only take brief periods or slow rates

of watering before ponding and/or runoff occurs. Insufficient watering can cause problems as well; if soil gets too dry, it can be time-consuming and costly to sufficiently re-wet the soil.

One way to conserve water is to develop a system to prioritize a lawn and garden's water needs. For example, the vegetable garden gets water before the flower beds, and they get water before trees/shrubs, which get water before the lawn.

WATCH THE WEATHER. This is true for watering the lawn, garden, flower beds, trees/shrubs or acres upon acres of hay or cropland:

- Don't water when it's going to rain, has just rained or is raining. Sit back and let Mother Nature take care of this round. Install a rain sensor in a lawn sprinkler system to avoid manually shutting down the system.
- Avoid watering when it's windy; windy conditions increase evaporation.

Water Conservation Tips for Lawns and Flower Beds

- Choose the irrigation system that is most efficient for the need; micro-spray systems, sprinklers, soaker hoses, drip systems and timers all have advantages and disadvantages. Make a list to decide what's best for the situation.
- To use a timer system – make sure it's in good working condition and if there is no rain sensor, remember to turn off irrigation when it's raining or windy.
- Drip or soaker hoses cause minimal surface wetting while allowing water to penetrate to the root zone. Soaker hoses minimize evaporative loss and can reduce water use by 60 percent or more. Plus, water can flow longer without causing run-off.
- Drip or soaker hoses and micro-spray systems are good for areas which dry out quickly (i.e. foundation and border plantings, along sidewalks, driveways, and streets).
- Position sprinklers so they don't water the side of the house, sidewalk or street.
- Apply water slow enough so run-off doesn't occur.
- One deep watering to fill the root zone with water is much better than lightly watering several times.
- Brief watering does not allow water to saturate through the grass/surface layer and reach roots.
- Frequent, shallow watering encourages shallow roots, which are more susceptible to stress under extreme conditions.
- Whenever possible, water in the early morning and early evening when evaporation is lowest. Lawns watered under the hot midday sun lose as much as 30 percent of applied water to evaporation. Avoid watering late in the evening; plants can develop fungus from being wet and cold all night.
- Established lawns only need 1 to 2 inches of water every 3–5 days. Apply an inch of water about every 3 days if the weather is very hot. A quick and easy way to know how deep water has penetrated the soil is by using a Paul Brown soil probe. Push a 1/4 or 3/8 inch metal rod into soil after irrigating. When the rod hits dry soil it will stop; that is how deep water has infiltrated.
- WATCH THE PLANTS: They'll show signs they need water…
  - They wilt
  - Colors become dull
  - Footprints in the lawn stay compressed for more than a few seconds
- Ground cover (mulch, rocks, straw, bedding plants) will reduce evaporation from bare surfaces around trees, steep slopes and along sidewalks and driveways.
- Use a 1- to 2-inch layer of mulch or compost on the soil surface above the root area; mulch and compost will increase soil water-holding capacity, keep soil cooler on hot summer days, reduce evaporation and weed growth, and prevent soil erosion.
- Set mower height to 2 inches; longer grass shades roots, keeps soil cooler, and reduces evaporative loss.
- Use a mulching mower and leave grass clippings to decompose on the lawn. Mulched clippings are fertilizer for grass, keep soil cooler, shade roots and help reduce evaporative loss. Spread out piles of clippings to prevent the underlying lawn from being killed.
- Dispose of fish tank water on flower beds – the green algae and fish excrement are rich in phosphorus and nitrogen.
- Buy and install rain barrels. These will help reduce runoff and collect rainwater for plants and outdoor uses. Encourage the local home and garden store to stock rain barrels. For more information, check out www.rainbarrelguide.com.
- Use gardening techniques that take advantage of rain. Rain gardens are designed with a depression at the center to collect rain and snow melt from the roof, alleys, sidewalks, driveways and gutters and allow it to naturally seep into the ground. Rain gardens can provide a "living fence" between properties and channel runoff to gardens. For more information visit: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_053992.pdf.
- Water-efficient landscaping like xeriscaping uses native and drought tolerant plants, shrubs, and ground cover. Xeriscaping is low maintenance, water wise and does not sacrifice beauty and color. Xeriscaping emphasizes proper soil preparation, efficient irrigation, and planting of low water use plants.
- Develop a landscape plan that uses natural conditions of the property and choose plants that are well-suited

to the climate and soil type. Look for native ground cover plants like Hairy goldenaster (*Heterotheca villosa*) whenever possible.

- Here are a few plant species requiring less than 14–15 inches of rain/year:
  - Penstemons (*Penstemon* spp.), pussytoes (*Antennaria* spp.), kinnickinnick dewberry (*Rubus multifer*), blanketflower (*Gaillardia* spp.), yarrow (*Achillea* spp.), and blue flax (*Linum perenne L.*) are native perennials with bright flowers.
  - Indian rice grass (*Oryzopis hymenoides*), buffalo grass (*Buchloe dactyloides* [Nutt.]), Idaho fescue (*Festuca idahoensis*) and green needlegrass (*Nassella viridula*) are native ornamental grasses.
  - Mountain mahogany (*Cercocarpus* spp.), junipers (*Juniperus* spp.), chokecherries (*Prunus* spp.), sumacs (*Rhus* spp.) and currants (*Ribes* spp.) are native shrubs.

Vegetable Garden Watering Tips

Know your plants. Different plants have different water requirements; onions do not need as much water as carrots, which don't need as much water as tomatoes, sweet corn or beans. Potatoes are very sensitive to insufficient soil water, but peppers do well where it's hot and drier. Watering when vegetable plants are producing the edible portion of the plant is more critical than other times. Newly-seeded plots and transplants should be watered shallowly, and more frequently than established plants. Timing of watering is important.

- The cool of the evening is the best time to soak or drip irrigate unless root rot is an issue in the garden – this gives the soil all night to absorb the water.
- Early morning is the best time for sprinklers – leaves will not be wet all night, reducing the potential for diseases like powdery mildew.
- Loosen soil around plants so the soil can quickly absorb water.
- Apply water in furrows or basins around plants to reduce evaporation losses – dig furrows between plant rows about 4–6 inches deep.
- Place mulch between plant rows to reduce evaporation. Use small amounts at a time to avoid causing mold or root problems.
- Soak the garden once a week to a depth of 6–12 inches and don't water again until the top few inches begin to dry out.
- Eliminate weeds. Plastic mulch around plants not only saves water, but it promotes early plant growth and cuts down on weed establishment.
- Plant cucumbers and squash in groups ("hills") whenever possible.
- Raised beds are good ways to conserve water and space. In raised beds, plants are more closely spaced, and there is less ground that is not planted that receives water.

Rules of Thumb for Watering Shrubs and Trees

Trees and shrubs need moist soil in order to grow, produce and remain robust against pests, injury, drought or disease. All woody plants need water from early spring through August, and newly planted trees and shrubs require water more often than established plants. Soak the soil approximately 30 inches deep and wet the entire root area – this can spread out as much as three times the spread of the limbs. In the fall, allow plants to "harden off" by gradually withholding water from September to mid-November. After leaf-fall and prior to ground freezing (mid-November), apply enough water to reach and saturate the root area; this helps prevent winter kill.

Know the water requirements of trees and shrubs and water accordingly; some species such as poplar, aspen, willow, maple and mountain ash need more water than lilac, cotoneaster, Douglas fir and pines, all of which are sensitive to excess water.

- To promote deep root establishment in new transplants or for deep rooted trees, a root feeder/irrigator that delivers irrigation to roots using a probe may be used for deep watering.
- Berms to create basins around trees or shrubs can be filled with water for slow infiltration and percolation. TIP: Berms should be removed in the fall to prevent water collection and freezing during the winter. These can damage the trunk and even girdle it, causing death.
- Reduce water loss through surface evaporation and prevent sunburn by wrapping young tree trunks up to the first lateral branch with purchased wraps or taped cardboard.
- Do not water the foliage of fruit of deciduous trees; it encourages blight, rust and mildews.
- 2½ to 3 gallons of water a week will keep a 6–8 foot tree alive during droughts.

How to Measure Applied Water

Outlined here are two simple ways to measure/estimate how much water is being applied to the lawn or garden.

Method 1:

After watering for two hours (less if run-off occurs), push a spade or shovel into the soil and push the soil or sod back enough to observe the depth of moist soil, then lay the soil or sod back in place. This gives a quick and easy determination of whether the water is reaching the desired depth. Schedule

the next watering when the top few inches of soil dry out (use the Paul Brown probe previously mentioned) or observe for signs of water stress in plants.

Method 2:

If using a sprinkler to water, place 3–5 empty straight-sided cans (coffee, tuna, cat/dog food) at even intervals and in a line running away from the sprinkler with the last can near the edge of the area being watered. Make sure the sprinkler placement gives consistent coverage or some areas may be water stressed. Now there are two choices:

1) Run the sprinkler for ½ hour, and then measure the depth of water in each can with a ruler. Add the depth of water in all cans, divide by the number of cans and multiply by 2 to get inches of water applied per hour.

Example: 4 cans got a total of 2 inches of water over ½ hour. 2 inches divided by 4 cans and multiplied by 2 = 1 inch of water per hour.

2) Check the time required to fill one can 1 inch deep with water. NOTE: length of time will vary depending on water pressure.

Example: it took 1 hour to fill a can with 1 inch of water, so application rate is 1 inch of water per hour. Now it is known how much water is being applied per hour.

In either method, not all water in the can will enter the soil. If it's determined that you can irrigate for 1 hour before causing runoff, and you'll need to add 3 inches of water, then irrigate for 1 hour in the morning, again in the early evening, and again the next morning. Apply this method to the entire property to see a drop in water use and lower water bills without sacrificing landscaping aesthetics.

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