DROUGHT ADVISORY

EM4834

Water Conservation in Gardens and Landscapes

Past droughts and threats of droughts in Washington have caused concern about survival of garden and landscape plants. These include many woody trees and shrubs, vegetables, bulbs, and bedding plants. Almost all landscapes in western Washington and all landscapes in eastern and central Washington need summer irrigation every year. Drought cycles will continue. As populations increase and water supplies from some aquifers decrease, more demands will be placed on present water supplies. The following are suggestions for saving water around home gardens and landscapes.

Understanding Water Loss

Water is lost from home gardens and landscapes in two different ways.

Water evaporates from the soil surface. The evaporation rate increases under hot, dry, low humidity or windy conditions. A combination of any of these conditions increases the evaporation rate even more. As the soil surface dries, more water from deep in the soil will be drawn to the soil surface, where it also evaporates. Plants also remove water from the soil. Only a small percentage is used for the plant. Most of the water is lost from the leaves by evaporation.

Soils vary in their water holding capacity (amount of water available to plants). Sandy, gravelly soils hold less water than heavier or clay type soils. Therefore, sandy soils tend to dry faster. Soil acts as a water reservoir. The amount of water held in this reservoir will increase with an increasing depth of good soil. Adding organic matter to sandy soils will increase the water holding capacity of those soils, making more water available to plants.

Strategies to Reduce Water Loss and Conserve Water

Strategies for conserving and reducing water use focus on three major areas.

1. Understanding and monitoring the water status in soils and reducing evaporation from the soil surface.
2. Understanding the critical times when plants need water and knowing how to apply water efficiently.
3. Drought cycles will continue to occur. Less and less water will be available for landscape use. Plan future landscapes and home grounds for more efficient water use.

Soil Preparation for New Plantings

Prepare the soil as deeply as possible. This can be accomplished by digging or double digging, tilling, and on large areas, by subsoiling. Subsoiling is breaking up hard soil layers with a tractor-drawn implement called a chisel. The addition of organic matter will increase the water holding capacity of the soil, increasing the efficiency of water use. *Do not* add organic matter to the backfill of individual planting holes when planting. Add organic matter to an entire area, such as a landscape bed, and mix with the soil as deeply as possible. Examples of organic matter to use include ground bark, compost, peat moss, well-rotted manure, and leaf mold. New transplants will need frequent irrigations until well established.

When and How Much to Irrigate

The easiest way to determine if water has to be added to the soil is to feel it. If the soil cannot be

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rolled into a ball, it is probably too dry. If the soil can be molded into a ball which crumbles when you rub it, it is probably just right. If the molded soil ball will not crumble when rolled, it is too wet. Sandy soil generally will not form a ball. Check the soil by digging with a shovel. The depth of adequate wetness can be determined by feeling the soil.

Watering Landscape and Vegetable Plants

The secret is to water *slowly,* deeply, and less often. Frequent shallow waterings encourage plants to develop shallow root systems. These plants suffer first in a drought. Some ways to conserve water follow.

1. **Use drip or trickle irrigation.** This method wets the soil slowly, allowing for slow, deep penetration. Up to 60% of the irrigation water can be saved using drip vs. conventional sprinkler irrigation. You can buy components for a drip irrigation system at hardware or garden center stores. A perforated sprinkler hose, placed upside down (with holes down) makes a very good temporary drip irrigation system.
2. **Water slowly.** If water runs off the soil surface, turf area, or over a sidewalk or street, the water is being added too fast and is being wasted. If it forms puddles, it is also being added too fast.
3. **Be sure that water penetrates the soil and does not run off.** Some soils, especially those high in organic matter, often are hard to rewet when they become very dry. Use a commercial horticultural wetting agent to aid in water penetration. Follow directions on the label.
4. **Irrigate at night or in early morning when the temperatures are cooler and the humidity is higher.** There will be less evaporation.
5. **Irrigate during a light rainfall** to maximize the effect of both the rain and the irrigation.
6. **Collect roof water from down spouts** in a pail or barrel for landscape use.
7. **Plant vegetable plants closer together.** Using this method decreases the amount of water needed per unit area, and reduces evaporation from the soil surface.
8. **Use drought tolerant (water conserving) plants.** Most native Pacific Northwest plants need limited summer irrigation. In many areas of Washington, these natives may need no summer irrigation. Separate water conserving and water demanding plants. Group plants with similar water needs together. This means you only have to irrigate part of the landscape.

Conserving Soil Water

Do anything you can to reduce evaporation from the soil surface. Mulching with up to 3 or 4 inches of shredded or ground bark, well-rotted compost, sawdust, wood shavings, wood chips, etc., is an excellent way to reduce irrigation frequency. Lawn clippings are also good, but these may mat down and dry out, making rewetting for water penetration difficult.

Avoid using peat moss as a mulch material. Also avoid black plastic, as it does not allow for water penetration and reduces necessary air exchange to the roots. The porous landscape fabrics are suitable. Avoid rock mulches, as they absorb, store, and reradiate heat, usually increasing plant water loss. Removal of weeds saves soil water. Shallow cultivation not only removes weeds but also creates a dust mulch (of soil) which may help reduce soil water loss.

Strategies for Plants

1. Encourage plant roots to grow as deeply as possible. This is done by deep soil preparation over a large area, and *deep*, infrequent waterings.

2. Plants vary in tolerating prolonged drought. Plants native to the western United States have evolved under a situation of dry summers and, therefore, can tolerate drier periods better than some exotic plants. Once established, these plants probably will not need to be irrigated.

3. Cutting back on fertilization might slow shrub and tree growth, reducing individual plant water use.

4. Plants in soft growth in spring and early summer need more water than in late summer,

fall, and winter, when they are not growing. Consequently, you may reduce watering in late summer.

5. Most turf areas may not need as much water as is commonly applied. Be sure that the water you apply will penetrate and become available to the roots. Remove any accumulated thatch at the recommended times in early spring or fall. You also may want to apply a wetting agent to aid in penetration of water through thatch layers. Aeration of turf during summer months also can assist in penetration of water when thatch or soil compaction is a problem.

For further information, see EB1090, *Watering Home Gardens and Landscape Plants*, available from WSU Cooperative Extension offices.

Information on soil moisture monitoring and crop evapotranspiration from Washington's Public Agricultural Weather Stations (PAWS) and Washington Irrigation Scheduling Expert (WISE) are available on the Scientific Irrigation Scheduling (SIS): web page http://sis.prosser.wsu.edu

Drought advisories and other Washington State University Cooperative Extension Bulletins are available online at http://pubs.wsu.edu
Type "drought" in the search box for downloadable files.

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