

Water Conservation in the Home Garden and Landscape

In any growing season, wet or dry, water conservation in the garden and landscape benefits both the gardener and the environment. Consider this: over 70% of the Earth's surface is covered with water, but less than 3% of this is fresh water and available for human use. People currently use more fresh water than rainfall replenishes. Practicing water conservation saves money and energy. Many cities and towns restrict outdoor water use during droughts.

Concerned gardeners can plant more drought-tolerant ornamentals in the landscape, or let the lawn go dormant for the summer. In the vegetable garden limiting water is less of an option and water conservation practices are especially important. Fruits and vegetables are 75% to 90% water and require regular irrigation, but there are steps gardeners can take to reduce the amount of water they use and to apply it more efficiently. The following guidelines will help gardeners make efficient use of limited water supplies while caring for gardens and landscapes.

Improve the Soil

Regular, annual incorporation of organic matter into the soil will build the soil's capacity to retain water. Sandy soils, in particular, benefit from this practice; clayey soils, which have a tendency to become compacted, will absorb water more easily. Optimally, gardeners should aim to reach and maintain 4% – 5% organic matter, especially in the vegetable garden. How to do this? In landscape plantings, regular applications of compost, leaf mold and biodegradable mulch will conserve moisture and gradually increase organic matter. In the vegetable garden, incorporate aged animal manure or compost, leaf mold, untreated lawn clippings or plant and till in cover crops like alfalfa, soybeans, oats, winter rye, or buckwheat to increase organic matter in the soil. Mulches such as straw, cardboard and biodegradable papers also add organic matter. A soil test by UMass Extension can determine the amount of organic matter in your soil.

New Plantings Need Water

The roots of all newly planted annuals, perennials, shrubs and trees must be kept uniformly moist, but not soggy, until they have established and show healthy new growth. At planting, make a shallow dish of soil around plants to help prevent water run-off, water thoroughly to soak the roots and settle the new soil around the roots. The amount of supplemental water needed thereafter depends on rainfall, temperature, wind, cloud cover, humidity and soil conditions. Generally, if less than 1" of rain has fallen in 5 – 7 days, new plantings must be watered. Plant herbaceous and woody perennials in the fall when rainfall is likely to be adequate.

How Much Water?

Water annual (vegetable and flower) transplants with 1½ quarts of water and large tomatoes and perennials with 3 quarts of water per plant at planting. Use less water if the soil is heavy and/or poorly drained. To provide the equivalent of 1" of rainfall, shrubs and trees require approximately 10 gallons of water applied twice a week to maintain a 20" – 24" root ball. New woody plants should be watered as necessary through the fall until the ground freezes.

Measure the amount of water to apply with a hose by filling a container of known volume with water running slowly from an open hose with no nozzle. For instance, if it takes 5 minutes for the water to fill a 2-gallon watering can, you know that it will take 25 minutes to apply 10 gallons of water with the hose. Run the water at a consistent rate each time. Set the rate so that all of the water is easily absorbed and no run-off occurs. Use a timer to tell you when stop!

The root balls of shrubs and trees will tend to dry out more quickly than the surrounding back-filled soil; keep the plant's root mass moist. For woody plants, check soil moisture to a depth of 12" by gently probing with a spade. Feel for moisture with your fingers.

Water Wisdom

- Check soil moisture by physical inspection.
- Avoid frequent, light sprinkling.
- Water slowly to avoid runoff. Water must penetrate deeply to establish healthy roots.
- Consider attaching a timer to your hose, or soaker hoses, so that water will shut off automatically.
- Account for rainfall and weather conditions.
- Heavy soils need less water; sandy soils need more.

Practice Conscientious Watering

Watch plants carefully and physically examine the soil with your fingers to determine when garden plants and grass need to be watered. For annual plants and newly planted perennials if the top 2" of soil are dry, or if you see plants wilting especially early in the morning, it's time to water. Water until the top 5" – 6" of soil around the plants becomes damp. Water all plants and lawns according to need, not necessarily according to a set schedule. Keep in mind that some plants such as annual flowers, cabbages, tomatoes, squash and grass may wilt during the onset of hot, sunny weather especially in mid-day, despite adequate watering. As the sun wanes, they should recover and will acclimate gradually to the heat stress.

A plant can only use water that comes in contact with its roots, not its leaves. To water trees and shrubs use a hose without a nozzle and allow the water to flow slowly for the requisite amount of time. Use soaker hoses or drip irrigation instead of spray nozzles or sprinklers where possible. Soaker hoses are inexpensive and readily available. Made of porous material, they allow water to seep out along the hose length at a slow rate, which can reduce water use by up to 50%. Overhead spray watering can spread water to pathways and areas not used by plants whereas drip irrigation directs water where it is needed.

Water your landscape in sections. Concentrate on each area individually for maximum benefit. Water sufficiently and then don't water again until physical inspection indicates that the area has become dry enough to water. Apply water during cooler morning hours when it is less likely to evaporate and direct water to the roots of the plant, where it is needed.

Take care not to over-water. Too much water can kill plants; soil should never be soggy. Roots need air as well as water. A damp environment can favor diseases and pests such as slugs, snails and earwigs. Too much water during the ripening period of fruits and vegetables such as tomatoes, melon and sweet corn can impair flavor and quality by reducing sugar content.

Watering Lawns

Keep newly seeded grass areas consistently moist until an even stand of seedling growth has established. Avoid water run-off. A thin layer of straw over the planting will help shade emerging seedlings and retain moisture. Decrease the amount of water gradually to encourage deeper rooting.

Thereafter, watch the soil and plant conditions; water as needed rather than according to a pre-set schedule. Frequent lawn watering often encourages shallow rooting and may increase susceptibility to disease and stress injury. To conserve water and avoid over watering, lawns should be watered just before the development of wilting and drought. Careful observation and experience will help you determine when to water.

Look for these signs:

- Footprints that remain in the grass for several minutes
- Grass begins to turn a bluish-green
- Leaf blades begin to roll or fold

Use a garden spade or a soil probe to examine the soil to a depth of 6". If the soil feels dry, it is time to water. Depending on soil texture, approximately 1" of water should wet most soils to an optimum depth of 4" – 6". Place several empty tuna or cat food cans under the sprinkler to catch the water. Stop watering when water collects in the cans to a depth of 1".

Night irrigation helps to conserve water and does not prolong the time the grass remains wet because of dew or water application. Drought resistant turf grass species, such as fine leaf fescues and tall fescues, reduce the need for supplemental watering. During prolonged drought and if outdoor watering is banned in your community, some grasses may go dormant, but should revive with the onset of fall rains.

In the Vegetable Garden: Think Outside the Row

Change the way you design and plant the vegetable garden to reduce watering. Arrange plants in blocks, rather than in single rows, so that germinating seeds and new transplants that require frequent watering can use water more efficiently. The leaves of plants grouped in blocks or wide rows shade a larger area of soil than plants in long, single rows. This shading slows evaporation and reduces the need for watering. Shading also prevents development of weed seedlings, which compete with vegetables for water. A wide row, or bed of plants can be watered from overhead without wasting water in pathways between rows. Organic matter, too, can be concentrated in the wide beds, instead of in the paths.

Protect developing plants from losing water to the wind. Create windbreaks, temporary or permanent, and use row covers over plants to retain soil moisture in windy sites.

Once the soil has warmed up, mulch around plants to retain soil moisture and discourage weeds. Apply a 2" – 3" layer of mulch such as straw, shredded leaves, newspaper, and untreated grass clippings around plants. More is not necessarily better; a thicker mulch layer may actually prevent water from reaching plant roots.

Vegetable and fruit plants require adequate moisture during critical times in their life cycle: in the initial period of development and during production of the edible plant parts. Instead of frequent shallow sprinklings, which can result in poor root development and consequently less drought resistance, water vegetables and berries thoroughly when needed.

Regardless of what kind of watering equipment you use in your garden and landscape, regularly check all hose connections, spigots, and watering heads for leaks and drips. Consider installing rain barrels with spigots. Weather promises to become more erratic, with heavier rain events and more frequent prolonged hot, dry spells as climate changes. Water with care.

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