



Irrigating (Watering) Your Vegetable Garden

Heidi Kratsch, Western Area Horticulture Specialist

Water Delivery

Hand watering with a hose is common, but it is difficult to apply water evenly and consistently to mature plantings. Hand watering is efficient for starting seeds and for watering containers. Using a fan nozzle will break the force of the water so you can avoid displacing seeds or damaging young transplants.

Furrow irrigation works well for row plantings. Furrows work best when they are wide and shallow (3 to 4 inches deep) and situated on level ground. If your soil is sandy, water will drain too quickly and the water will not travel the length of the row. In this case, limit furrows to larger crops such as tomatoes and peppers, creating a basin to hold water around the plant roots.

Water is a critical factor in the success of a vegetable garden. Plants need consistent amounts of water during the growing season in order to grow and develop normally. Any lapse in availability of water could significantly weaken your crops and affect the quantity and quality of your harvest. Applying too much water at one time leaches nutrients from the soil; applying water too frequently limits root access to oxygen. It is important to provide the right amount of water at the right time for healthy, productive vegetable plants.

How much? How much water your plants need is a question of how deeply and how often to water. How deeply you water depends on the depth of the plant roots. Most vegetable plant roots go down 6 to 12 inches into the soil. However, long-season plants such as tomato, corn, squash and melon, and perennial plants such as asparagus, raspberry and rhubarb can go down as deep as 24 inches or more. Provide enough water to wet the soil to the depth at which most of the roots are found. You can check the depth of your irrigation by inserting a metal rod or screw driver into the ground after watering. When the rod meets with resistance in the soil (indicating you have struck dry soil), place your thumb and forefinger around the rod at the soil surface and pull up. The distance from your fingertip to the end of the rod tells you how deeply the water has penetrated the soil.

How often? How often you water your plants depends on two factors – your soil texture and the weather. Soil texture refers to the size of the mineral particles in your soil. Sandy soils have large particles with large air spaces in between; they drain quickly and need to be watered frequently. Silty or clayey soils have smaller particles; they will need less frequent irrigation because they hold more water. In fact, clayey soils drain so slowly that you have to be

Soaker hoses are easy for the beginning gardener. Water seeps out along the entire length of the hose for delivery of water directly to the roots. Set the hose along the length of planting rows, or snake it around to cover the area in wider beds. Because water is delivered slowly, it will take longer for the water to reach deeper roots. Plan to leave a soaker hose running longer than you would a sprinkler, and check for depth of watering with a stake or trowel.

Drip irrigation is the most efficient method of water delivery. Ready-to-assemble drip kits can be purchased and provide everything you need to get started. The basic components include a timer, backflow preventer, valve, filter, pressure regulator, pipes, tubing and emitters. Fittings are used to attach to a host bibb (faucet) or they can be screwed on to a hose end. The simplest systems have pre-installed emitters (inline emitters) at set distances along the tubing. Drip irrigation works well in sandy soils and on slopes, where it minimizes runoff.

careful you don't provide water too rapidly or the water will begin to pool on the soil surface and run off before it can reach the deeper plant roots. If this happens, you should stop watering and allow the water to soak into the soil before resuming irrigation. An alternative is to use a slower method of water delivery such as a soaker hose or drip irrigation – water delivery methods are discussed in more detail in the sidebar.

The weather also influences how frequently you water. Plants take up more water, and water evaporates from the soil surface more quickly in hot, windy and dry weather. So, vegetables grown in the spring (cool-season vegetables) usually require less frequent irrigation than do vegetables grown in the heat of summer (warm-season vegetables). On a hot summer day, you may need to water your vegetables every day, but check your soil before you water to see if it needs it. You can do this by digging into the soil about three to four inches and try to work it into a ball. Soil that falls apart easily and barely holds together needs water. If the soil holds together easily without breaking apart, you don't need to water. Most importantly, your vegetable plants will need more frequent watering when plants are young, until they establish an adequate root system.

Container gardening. Many vegetable growers in urban areas have limited space for growing, and container vegetable gardening is becoming a popular way for people with limited space to have access to fresh produce throughout the growing season. Vegetable plants that do well in containers include cherry tomatoes, peas, salad greens, hot and sweet peppers; and culinary herbs such as basil, cilantro, oregano and thyme. Keep in mind that any plant growing in a container has a limited root volume of soil, so once the water drains from the pot, it is unavailable to the plant. For this reason, vegetable plants in containers will need to be monitored closely and watered more frequently than plants growing in the ground. Some plants with large leaves, such as melon or squash, may wilt during the hottest part of the afternoon. This is because they are losing water from their leaves faster than their roots can take it up from the soil. Providing extra water will not help; put up a temporary or permanent wind break, or provide afternoon shade to sensitive plants to protect them and conserve water.

Plants should recover as the temperature cools later in the day.

Conserve water. Water is important to the healthy development of your vegetable plants, but water that doesn't reach plant roots does nothing for your plants and costs you money. Water is wasted when it evaporates from soil during the heat of the day and when it is applied to unplanted areas and on paved surfaces. Water from high-pressure sprinklers can evaporate into the air even before the droplets hit the ground. The following are tips to help you conserve water when watering your vegetable garden:

Water early in the day. Temperatures are cooler early in the day, so there is less chance of evaporation from the soil or sprinkler heads. Also, it is usually less windy earlier in the day, so water from sprinklers stays on plants instead of blowing to other parts of your yard or onto pavement. Therefore, water applied early in the day has a better chance of soaking into the ground where roots can take it up.

Apply mulch. Mulching around your vegetable plants minimizes water evaporation from soil, and has the added benefit of reducing germination of weed seeds that may be present in your soil. In fact, keeping the weed population down, in and of itself, can help conserve water because water taken up by weeds is not available to your plants – weeds use up precious water. Mulches appropriate for vegetable gardens include compost, straw (but not hay due to presence of weed seeds), grass clippings and shredded or ground wood chips. These should be applied to a depth of 2 to 4 inches and kept a few inches away from the

crown of the plant. Grass clippings should not come from lawns treated with herbicides and should be applied thinly to a depth of about 1 inch. Another mulch option is plastic or fabric sheeting, which must be laid down prior to planting. Holes are cut into the sheeting, and a single transplant is inserted into each cut hole. Plastic sheeting heats up the soil in the spring and may allow earlier planting of cool-season crops, but it can heat the soil too much in summer and create heat stress for some warm-season crops.

Use drip irrigation or a soaker hose. Drip irrigation uses a system of polyethylene pipes and small tubes to deliver water at low pressure directly to plants. Because water is delivered at low pressure (5 to 30 pounds per square inch), it is applied more slowly than with sprinkler irrigation. A soaker hose is similar to a drip irrigation system but is simpler in design. A soaker hose is covered with tiny perforations that force water out so it seeps slowly into the ground, where it can replenish the soil water for plant roots. Evaporation is minimized with these systems because the water is not thrown into the air as it is with a sprinkler, and the water is delivered slow enough that plant roots have a chance to take up most of the water that is applied.

Above all, provide water frequently enough that your plants don't dry out, but not so much that your soil stays wet. This means getting your fingers into the soil regularly to check its water status. The better you are at observing your plant and soil condition, the more vigorous and productive your garden will be!



A stake is used to position an emitter for a large plant or grouping of plants (left). Drip irrigation tubing can be snaked through a large bed to accommodate different plant arrangements (right).

References

Kratsch, H.A. (Ed.). In Press. Water-Efficient Landscaping for the Intermountain West: A Professional and Do-It-Yourself Guide. Utah State University Press, Logan, Utah.

Pittenger, D.R. (Ed.). 2002. California Master Gardener Handbook. University of California Agriculture and Natural Resources Publication no. 3382, Oakland, California.

Whiting, D., C. O'Meara, and C. Wilson. 2008. Irrigating the Vegetable Garden. Colorado State University Extension, Colorado Master Gardener GardenNotes no. 714. Available online at <http://www.cmg.colostate.edu/gardennotes/714.pdf>.

Wilson, C. and M. Bauer. 2005. Drip Irrigation for Home Gardens. Colorado State University Extension Publication no. 4.702. Available online at <http://www.ext.colostate.edu/pubs/garden/04702.html>.

The University of Nevada, Reno is an Equal Opportunity/ Affirmative Action employer and does not discriminate on the basis of race, color, religion, sex, age, creed, national origin, veteran status, physical or mental disability, or sexual orientation in any program or activity it conducts. The University of Nevada employs only United States citizens and aliens lawfully authorized to work in the United States.

Copyright © 2010 University of Nevada Cooperative Extension