

Smart watering in the vegetable garden

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Smart gardeners know managing water in a home vegetable garden not only conserves water resources, but will also lead to healthy plants and improved productivity. But how much water does a vegetable garden need? The answer is rooted in understanding your garden soil and plant's needs at various stages during their life cycle.

Get to know your soil

First, dig into your garden and find out whether you have clay or sandy soil. Different soil types dramatically affect how much moisture is available to garden plants. Sandy soils are prone to drying while soils with high clay content hold moisture much longer. Soils with proper amounts of organic matter will better retain moisture during drought. It may be necessary to add organic matter to your garden in the beginning of the season or after harvest each year. Compost or well-rotted manures are often used for moisture retention and can contain natural bacteria and microorganisms to boost soil health (see the Smart Gardening tip sheet "Smart fertilizer use: A vegetable garden begins with a soil management plan" at www.migarden.msu.edu). To gain an understanding of your soil type and organic matter levels, find out how to take a soil sample in the Smart Gardening tip sheet "Don't guess – soil test!" at www.migarden.msu.edu. Soil tests can be purchased online at the MSU Extension Bookstore (search for E3154 at www.shop.msu.edu).

When to water

As with other plants, the time of day when you water is as important as how much water. Long periods of leaf wetness can lead to certain diseases. Focus on watering during morning hours or mid-day when leaves will dry off quickly, and if possible, avoid overhead irrigation. This helps reduce the potential for disease infections. Watering in the morning also reduces water loss from evaporation.

How much to water

Some years natural rainfall may supply all the moisture your vegetable garden needs. However, with seasonal variations of rainfall and temperature conditions, gardeners may wonder if they need to provide additional water, and if so, how much? One way to know is to use a rain gauge. Wide variations in weather patterns distribute uneven amounts of rainfall across a geographical area. Watch your local weather forecast for information on rainfall, or visit MSU's Enviroweather at www.enviroweather.msu.edu and check the station nearest you. Be aware if you are out-of-town, one site may receive little to no rainfall while another nearby site could receive a deluge. Using a measuring device like a rain gauge or even an empty can will help you know how much water your garden received while you were sleeping. The gauge should be near the garden where water splashing off pavement or overhangs won't affect the reading.



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Smart irrigation types are soaker hoses or drip irrigation systems, commonly combined with plastic mulch.



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Many commercial sprinklers do not distribute an even pattern and should be evaluated using a rain gauge or empty can.

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Measuring irrigation outputs from your sprinkler or other watering source will help smart gardeners know how much irrigation is being applied. Many commercial sprinklers do not distribute water in an even pattern across the swath. If only using time as a method of measure, some of your vegetable plants may languish without enough water while others may be swimming.

Most gardening references agree the average garden needs about 1 inch of water a week. However, days that are windy and sunny with low humidity cause far greater losses of soil moisture than cloudy, calm or humid days. Never underestimate the power of your index finger when it comes to deciding when to water. Inserting your finger into the soil profile at a 1- to 2-inch depth will quickly tell you whether or not the soil is dry. When you can feel moisture just under the surface, you know irrigation is probably not needed.

Consider the plant's life cycle when you water. For example, recent transplants need frequent, light watering to accommodate their shallow, young roots and ease the shock of being pulled from their containers. Once plants are established, keep soil moist to a depth of 6-8 inches.

Steady watering is critical at the time of flowering and fruit formation to improve fruit set, flavor and quality. Consistent soil moisture can also prevent some vegetable disorders such as blossom end rot on tomatoes.

Conservation is key

Many soils have adequate moisture-holding capacity. However, when soils don't have any vegetative covering or mulch, they dry out quickly, causing the beneficial microorganisms in the upper couple of inches of soil to be less effective. See the Smart Gardening tip sheet "Smart gardens begin with healthy soil" at www.migarden.msu.edu for more information.

Organic mulch such as straw, shredded leaves, bark or compost conserves water in your soil by shielding the ground from the hot rays that evaporates moisture. Organic mulches don't have to be thick to be effective. Using a layer 1-3 inches deep in between rows or beds will be sufficient for at least one year. Coarse, fibrous



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materials such as shredded bark may provide cover for up to three years.

Soak the soil before you lay on mulch. Just as the mulch maintains soil moisture evaporation, it also slows penetration of water to the roots. It's more efficient to get the water down first then mulch. It may also initially save your plants from waiting for water to percolate through the mulch when they are accustomed to getting it right away. As an extra bonus, mulch suppresses those thirsty weeds trying to elbow their way in the garden.

When plants are placed into beds instead of wide rows, the emerging canopy of foliage will act as a moisture conservation tool. When the foliage completely shades the soil, less moisture is lost and fewer competing weeds will germinate.

Inorganic mulches such as black or colored plastic will keep valuable moisture in the soil profile when summer heat escalates. Plastic mulch will need a source of moisture such as a drip or soaker hose underneath since the plastic also sheds natural rainfall and overhead irrigation. As with organic mulches, be sure to water the soil first before laying down the plastic.

Soak 'em with soaker hoses and drip irrigation

There are a myriad of irrigation methods for vegetable gardens. The "smartest" types of irrigation are soaker hoses and drip irrigation systems. These two methods drastically reduce the quantity of water needed because water is concentrated at the root zone – right where it's needed – so less water is wasted. These systems also lay on the ground beneath the foliage canopy, providing water to the root system without wetting the foliage.

Soaker hoses and drip systems are often used in tandem with organic or inorganic mulch with the mulch covering the hoses or tubing. This efficient method of watering allows moisture to be distributed to the root system while conserving water loss from evaporation.

For more information on a wide variety of **smart gardening** articles, or to find out about smart gardening classes and events, visit www.migarden.msu.edu.

