



YOUTH GARDENING IN TENNESSEE: **MAINTAINING MOISTURE IN THE HOME OR SCHOOL GARDEN**

Emily A. Gonzalez
UT-TSU Extension Agent, Knox County



Photo Credit: Emily A. Gonzalez



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Along with sunlight, nutrients and oxygen, plants need water to live. In Tennessee it's smart to plan on watering the garden, especially raised beds that tend to dry out faster than traditional gardens. Water is needed for plant growth, as it carries nutrients throughout the plant, allows plants to transpire, and allows for **photosynthesis**. **Transpiration** is the process by which moisture is carried through plants from roots to small pores on the underside of leaves, where it changes from vapor and is released to the atmosphere. Photosynthesis is the process through which plants produce sugar and oxygen from carbon dioxide and water while using light to power this process. Many vegetables, like tomatoes, are composed mainly of water. When there is not enough water available, fruits and vegetables do not develop normally and are stunted, as nutrients are not carried by the water throughout the plant.

When and How Much to Water

You can decide when the garden should be watered by feeling the soil and observing the plants. If the surface of the soil looks hard, baked or cracked, it's probably dry and time to water. However, if the first inch of soil is moist to the touch, then your plants probably have enough water for the time being. Anything grown from seed will need to be watered on a continual basis for the first few weeks, or until roots are established and can reach water well below the soil surface.

Another sign that your plants may need water is that the plants are wilting. However, too much moisture in the soil can also cause plants to wilt, a condition referred to as "wet" wilt, so feel the soil before adding water. An ideal time of day

to water is when the temperatures are cooler, as less water will be lost to **evaporation**. Evaporation occurs when water changes from a liquid to a gas or vapor. To determine how much rainfall your garden is getting each week, you can use a rain gauge like the one pictured to the left.

While watering during early morning or at night may not always be practical in a school garden setting, students may choose to water during recess or before school, as long as the tools needed for watering are made accessible. Your best bet for a successful garden is to maintain a regular watering schedule. Students in school can maintain a schedule for each day of the week, and, if it doesn't rain, the garden can be watered each day. The same can be done in a home garden. Once the plants are established, usually after two or three weeks, they need water on a less regular basis as they're able to extend down into the soil with their roots. Once plants are well anchored in soil, they need at least 1 inch of water per week. To determine how much rainfall your garden is getting each week, you can use a rain gauge like the one pictured to the left. If your plants are getting less than 1 inch of rainfall per week, you may need to **supplement** (add to) the amount of water in your garden.

The amount of water the garden needs depends on a few factors, including soil type, container type and size, the kind of plants you're growing, and whether there's high heat and/or wind. Mixing clay topsoil with compost, soil conditioner, or "garden soil" will create a better soil for raised bed gardening than just clay or organic materials alone and will not dry out as quickly as raised beds filled with coarse, organic material. Fruits and vegetables grown in containers and even raised beds will need to be watered more frequently than plants grown in the ground. Plants grown in small pots will need to be watered every day when it doesn't rain and the weather is hot and/or windy.

Watering Methods

The most important thing to remember when choosing a method of watering is that the water should be directed to the soil surrounding the roots whenever possible—not the leaves. This will help you to conserve water and maximize the amount of water that reaches the roots while keeping the water off the leaves, which can invite diseases in Tennessee's humid climate. As even the hardiest plants can develop diseases when their leaves are kept wet, it's a smart strategy to keep the water on and in the soil. A couple of common ways to water by hand include using a hose-end sprayer or a watering can. Although watering by hose can be done with or without a hand attachment, using a hand attachment can give students more control over where the water goes and how much water is being applied. Watering cans are a convenient option when a hose is out of reach or unavailable. Using watering cans may also provide good exercise, and they are easy to use and inexpensive. We find that in most school gardening situations, watering cans are the best solution. Using either of these methods, you can determine how much water you're adding to the garden by measuring it with a rain gauge, just

as you would with rainfall. Simply place your gauge under the watering source and count how long it takes to fill it to 1 inch. This will probably take longer using the watering can versus the hose attachment, since the hose would likely deliver higher water pressure. Soaker hoses would probably take the longest to provide 1 inch of water.

Soaker hoses can be used successfully in the home or school garden. They can be attached to regular hoses and then stretched throughout the garden. Soaker hoses have small pores that let the water soak out gradually and should be directed around the roots. For the convenience of the gardener, hoses can be linked to a timer, which is usually not very expensive. An easy way to estimate how long it will take for the soaker hose to emit an inch of water would be to lay a portion of the hose over a flat-bottomed container and time how long it takes for the container to fill 1 inch. In all of these watering methods, it is important to **monitor** (check on) soil moisture throughout the week.

Gardening in Drought

Some seasons and years are drier than others, and drought can come unexpectedly. During hot, dry or windy weather conditions, it can be a challenge to keep the ground watered. Depending on the size of the garden, it can also become costly as well as time consuming. Below are a few tips that can help the home, school or community gardener limit the amount of watering that needs to be done in order to garden successfully.

- Mulches can be used to help prevent **soil erosion** and keep water from evaporating. Soil erosion occurs when soil is blown away by wind or washed away by water. Mulch is anything that covers the ground around the plants. Besides helping to conserve moisture, mulches free of weed seeds also help prevent weeds from growing. Wheat, oat and pine straw make fine mulches for the home garden and are readily available in Tennessee. Cover crops, if given enough time to grow beforehand, can also be cut back and the

debris used as a nitrogen rich straw. Using several layers of newspaper sheet will provide an additional layer of weed suppression while conserving moisture. For more tips on building soils and soil nutrition, please refer to W 362-B "[Soil Building and Plant Nutrition.](#)"

- Garden during the cool seasons. Spring is an excellent time to garden in Tennessee because there is usually abundant rainfall. Cooler temperatures also cut down on the amount of evaporation. For this reason, fall is another excellent time to grow, although rainfall levels tend to be lower — so watering could be more important. Cool-season crops such as kale, radishes, bok choy or pak choi, arugula, lettuces, and chives all grow well during the cool weather of spring and fall in Tennessee and can provide an abundant crop in just a few months. For more information on these crops and how to grow them please refer to W 362-D "[Ten Favorite Plants for Youth Gardeners in Tennessee.](#)"
- Grow drought-tolerant crops. Summer is a fun time to garden, but in order to avoid spending too much time tending your garden during the summer heat, consider planting crops that are more resistant to drought and hot weather conditions: chives, cherry tomatoes, small bell peppers and sweet potatoes. These crops are also nutrient rich, endure hot weather and are fairly disease resistant. You can also find more information on how to grow these crops in W 362-D "[Ten Favorite Plants for Youth Gardeners in Tennessee.](#)"
- Crowd out the competition. Weeds compete with your veggies for water, so be sure to take measures to prevent weeds and pull them when they appear. One way to kill weeds before planting your garden is by covering the soil with black plastic, which can be purchased at many home improvement stores. Large, black trash bags work as well! Plastic can be pinned down using landscape staples, sticks, rocks, or even plastic wear. Just be sure to pin or weigh the plastic down for at least two weeks before planting your garden in order to kill the weeds. It is also wise to cover your garden soil after the growing season so that new weeds don't **emerge** (come out) and produce additional seeds.

References and further reading:

<http://water.usgs.gov/edu/watercycletranspiration.html>

W 346-D The Tennessee Vegetable Garden: Plant Management Practices
extension.tennessee.edu/publications/Documents/W346-D.pdf

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