



TOWER
GARDEN

BY JUICE PLUS+®

GROWING GUIDE: PEPPERS

Peppers are enjoyed worldwide. If you like Indian curries, Hungarian paprika, Italian puttanesca sauce, Chinese kung pao chicken or Mexican chiles rellenos, think how convenient it would be to have sweet or hot peppers growing right outside your door.

Thankfully, no extensive preparation is required — raw, sliced peppers are a crunchy, healthy treat served on their own or with a dip. Or you can dice them and toss them on pizza.

Peppers are good for you, too! Depending on the variety, they are rich in carotene, lycopene, vitamin C and other antioxidants.

Growing peppers in a Tower Garden® is even easier than growing them in the ground. No kneeling, no bending, no tilling, no dirt! Of course, there are some tips and tricks you should know about for growing healthy, productive peppers in a Tower Garden®. Read on to learn how to choose your pepper varieties, sow seeds, transplant seedlings, pinch, fight pests, and know when to harvest.

Get ready...get set...grow!



THE ANATOMY OF A PEPPER PLANT

- **Main Stem:** The trunk of the pepper plant
- **Node:** The part of the main stem that the side stems grow from
- **Internode:** The section of the main stem between two nodes
- **Flowers:** Small white petals from which the fruit will form once the flower has been pollinated
- **Peppers:** The edible part of the plant — shiny green, red or orange on the outside; shaped like a bell or elongated and curved at the tip; hollow inside with white seeds
- **Dominant Growing Tip:** The tender young shoot of the plant
- **Leaves:** Pretty self-explanatory, right?

THE ANATOMY OF A TOWER GARDEN®

- **Rock Cubes:** The growing medium used to sow seeds
- **Net Pot:** The container used to plant seedlings
- **Growing Pot:** One of several interconnecting sections of the Tower Garden®
- **Plant Site:** The openings in the Tower Garden® where the plants go

In a nutshell:

- The seed goes into the rock fiber starter plug...
- The rock fiber starter plug with the seedling goes into the net pot...
- The net pot goes into the plant site...
- There are four plant sites in a growing pot...
- And five growing pots make a Tower Garden®!

BEFORE YOU PLANT: Choosing Your Varieties

From deliciously sweet to mouth-burning hot, peppers come in all kinds of varieties.

Sweet Peppers

The most common kind of peppers, sweet peppers come in many types, but all are known for their mild flavor. Bell peppers are the most recognizable, and are named — you guessed it — for the bell shape of their fruit. Pimento peppers are another type of sweet pepper — the kind used to make that red stuffing inside green olives.

Mildly Hot Peppers

Mildly hot peppers are the first level of peppers registered on the Scoville Ratings, a scale devised to measure the spicy heat of a chili pepper. While these peppers are officially considered hot, they are more often described as having a little bite to them. Peppers that fall into this category include poblano, Anaheim, paprika and pepperoncini.

Hot Peppers

Like heat? Hot peppers are the hottest peppers registered on the Scoville Ratings. These are the peppers that will bring tears to your eyes and make you break out into a sweat. Thai chili and habañeros are some examples of hot peppers.

Medium Hot Peppers

If mildly hot peppers are too meek for your taste buds, but hot peppers are over the top, then medium hot peppers might be just right. Jalapeño, red Fresno and Hungarian wax peppers fall into this category.

BEFORE YOU PLANT: Deciding When to Plant

For most areas, the best time to plant peppers is after the fear of frost has passed (which can be as late as mid-May or early June, depending on where you're located) and when daytime temperatures reach 70°–90° throughout the crop's season.

Like tomatoes, peppers absolutely love the sun—the hotter the better when it comes to keeping these plants happy. Their growth can slow down if temperatures dip below 55° on any given day, and it might take a few days afterward for them to start growing normally again.

When can you start enjoying stuffed peppers? In general, you can transplant peppers 3–4 weeks after germination (sprouting). Sweet and mildly hot peppers should be ready to harvest in another 6–8 weeks, while you can expect a long wait of 9–10 weeks for the hot pepper varieties.

PLANTING: Seed Sowing and Germination

Your Tower Garden® Kit comes with everything you need to get started growing peppers.

Step 1: Locate the slab of Rockwool cubes and place in the seed starter tray.

Step 2: Thoroughly wet the Rockwool cubes by completely submerging the slab for 30 minutes in Tower Tonic nutrient solution. (Please reference the Tower Garden® Instruction Manual for more information.) This will stabilize the pH of your cubes. After 30 minutes, thoroughly flush cubes with fresh water.

Important: Because the Rockwool repels water, you can't get away with just spraying it. You really need to soak it!

Step 3: Drain all excess water from the seed starter tray.

Step 4: Sow 4 seeds per cube.

Step 5: Lightly cover the seeds in the cube with coarse vermiculite, which will help retain the right amount of moisture, and gently sprinkle a little water over each hole to wet the vermiculite.

Step 6: After seeding, put a little water into the bottom of the container. If possible, use filtered water without chlorine. Do not close the lid.

Step 7: Place seed starter tray outside in semi-shade (a bench or table will do nicely) until the seeds have germinated. Always keep about 1/8"–1/4" of fresh water in the bottom of the tray.

Step 8: Once the seeds have germinated (about 7–14 days), IMMEDIATELY place outside in full sun for 7–14 days to increase their hardiness.

Step 9: Make sure your sprouted seeds have 1/4" of fresh water in the bottom of the tray each morning so your seedlings won't dry out during the day. Add Tower Garden® fertilizer solution every other morning in place of fresh water.

Step 10: Approximately 3–4 weeks after germination, or when the plants have 4–6 true leaves, your seedlings should be ready to transplant into the Tower Garden®! This crop is very sensitive to frost, so make sure you don't transplant seedlings into the Tower until the fear of frost has passed. It's best to wait until nighttime temperatures remain steadily above 50°.

PLANTING: Transplanting into the Tower Garden®

Generally, you can transplant your seedlings into your Tower Garden® 3–4 weeks after they germinate. The exact time frame depends on the date of the last frost in your area. Peppers hate frost!

If you're using a Submersible Heater and a frost blanket, you can start transplanting three weeks before the suggested planting date. Just make sure you heat the water in the Tower Tonic reservoir to a minimum of 70° until daytime temperatures rise to that level.

Step 1: Gently separate the plugs in the Rockwool slab. Do your best to break as few roots as possible.

Step 2: Your assembled Tower Garden® should already have a net pot in each planting port. Place each cube with its newly planted seedling into one of these net pots. Guide any hanging roots from the net pot into the growing pot.

Step 3: Be SURE the bottom of the plug is securely against the bottom of the net pot. This aligns the plant for optimal irrigation inside the Tower Garden® and keeps it from getting too dry.

MAINTAINING PLANT HEALTH: How to Keep Your Plants Happy

Tower Gardens are wonderfully free of some of the bothers of traditional gardening: there's no weeding, tilling, kneeling, or getting dirty! Just a few basic maintenance steps will keep your plants healthy and happy.

Maintain Tower Tonic Levels

Because your Tower Garden® doesn't use any dirt, your plants are totally dependent on Tower Tonic to get their nutritional needs met. (Kind of like a baby and a bottle.)

- Maintain the recommended Tower Tonic levels at all times to allow your plants maximum uptake of the nutrients they need to grow.
- With a "young" Tower Garden®, check the Tower Tonic levels twice a week to learn how quickly your plants are utilizing the tonic solution. Later, as your plants grow larger and the roots have reached the reservoir, you'll probably need to refill the tonic solution every 2–3 days.

Avoid Plant Stress

It's well documented that healthy plants are less desirable to insects! A plant that is stressed in some way — whether from lack of water or nutrients, or from heat, wind or cold stress — becomes an easy target for pests and disease.

Dehydration, starvation, heat, wind, and cold can all cause a plant to wilt. Therefore, the number-one rule for keeping plants healthy is to prevent wilting!

- Always maintain a cool temperature within the reservoir. Tower Tonic should never feel warmer than the temperature of your skin.
- On a very windy or extremely hot day, turn the irrigation timer to run constantly for the most stressful hours of the day. Just remember to turn the timer back to its normal cycling times!

Tower Garden® Tip: If your Tower Garden® has to be partly shaded due to your surroundings, it is better to have afternoon shade, when the day is the hottest!

Keep It Clean

When it comes to your Tower Garden®, clean is good. You don't have to pass the white-glove test, but keeping your Tower Garden® debris-free discourages plant pathogens.

- Keep your Tower Garden® in as clean an area as possible.
- Remove most mature, yellowing or brittle leaves from the base of the plant.
- Keep loose plant debris and insect debris clear from the top of the reservoir tank, and place the compost of discarded plant clippings well away from your actively growing Tower Garden®.

MAINTAINING PLANT HEALTH: Managing Pests

Like most crops, peppers are vulnerable to pests. These vary by region and time of year. Fortunately, growing plants off the ground in a Tower Garden® is one of the best ways to avoid pests!



Aphids

Aphids are small, soft-bodied insects that are most commonly green and black in color, but may also be gray, brown, pink, red, yellow, or lavender. They tend to feed on tender, young growth, causing it to appear puckered or deformed. Though they are visible to the naked eye, they also leave behind an excretion known as honeydew, which is another method of identification.

What to do if you have them: There are numerous methods of aphid control, including botanical sprays such as insecticidal soap, pyrethrum, rotenone and horticultural oils. Beneficial insects such as ladybugs will also help to eradicate the pest.



Thrips

Visible to the naked eye, adult thrips are small, pale-yellow insects (occasionally black) with elongated bodies and fringed wings. They tend to hide in the centers of flowers and scatter when the bloom is disturbed. Thrips are sap-sucking insects whose feeding injury appears as coarse stippling on the leaf surface. Large populations of thrips cause serious plant injury, which results in a silvery or scratchy appearance on leaf surfaces.

What to do if you have them: You can control thrips by using botanical sprays such as insecticidal soap, neem oil, pyrethrum, rotenone and horticultural oil sprays.



Whitefly

Sap-sucking insects that are visible to the naked eyes, whiteflies have slender white bodies and wings and tend to congregate on the undersides of leaves to feed. They are one of the most serious pests in the agricultural industry, affecting both field and greenhouse growers.

What to do if you have them: Reach for your botanical sprays such as pyrethrum, rotenone and horticultural oil sprays.

For more info:

For additional information on how to handle crop pests, consult your local office of the Cooperative Extension System, a nationwide, governmental educational network that provides useful information on agricultural practices.

<http://www.csrees.usda.gov/Extension/>

MAINTAINING PLANT HEALTH: Managing Disease

Not all plant problems are caused by pests; some are caused by disease. Here are the ones most likely to affect peppers.



Leaf Spot

Best identified by black spots or lesions on the leaves, bacterial leaf spots are encouraged by wet, humid conditions and disseminated through splashing water such as rainfall. Leaf spots develop gray to tan centers with darker borders. Leaf spot can be spread through horticultural practices, such as transferring the disease during harvest or handling. The bacterium is reported to be seed borne.

What to do if you have it: The best control for this disease is prevention: buy only disease-resistant seed or plant material. Maintain good air circulation through consistent harvesting. And remove diseased plant material to keep it from spreading.



Powdery Mildew

This is one of the most widespread and recognizable fungal diseases. Powdery mildew forms a white to grayish powdery growth, usually on the upper surfaces of leaves. Fungal spores are spread by wind and can survive the winter on nearby plants and in plant debris. The warm days and cool nights of late summer create an ideal climate for spore growth and dispersal.

What to do if you have it: To control mildews, prune plants to improve air circulation and dispose of infected plants. To control minor infestations, pick off affected plant parts and dispose of them immediately. In the case of a larger outbreak, apply bicarbonate and copper sprays to prevent spread of the infection.



Botrytis

A gray mold that thrives in humid yet relatively cool environments, Botrytis is a devastating disease that can be exacerbated by poor air circulation. This gray-brown fuzzy growth can appear on plant debris that has fallen from the plant or on the remaining stem after harvest.

What to do if you have it: The best way to control for Botrytis is to keep a clean growing environment, since there are no fungicides listed for use on peppers.

HARVESTING

You should expect to be harvesting your delicious peppers about 65–85 days after transplanting them into your Tower Garden®. Keep these things in mind when harvesting:

- Most peppers change color from green to red, yellow, purple, or orange when they're ripe. As the color of the fruit changes, so does the flavor.
- Keep in mind that peppers don't continue to ripen once you remove them from the plant, so leave them attached until they're as ripe as you want them.
- It's perfectly fine to harvest peppers before they reach full maturity. In fact, the immature fruit of some varieties is actually more flavorful.
- Make sure to use a knife or shears to remove the peppers from the plant so you don't cause injury to the rest of the plant.
- To harvest, make a cut above the cap of the pepper, leaving a portion on the stem still attached.