



TOWER
GARDEN

BY JUICE PLUS+® **GROWING GUIDE: BASIL**

Fresh pesto ... caprese salad ... homemade soup. What would the world be like without basil? With its distinct sweet and pungent taste, basil is one of the most-loved spices in Italy, Asia and the United States.

Basil is a wonderful crop for beginning gardeners because as long as you keep it well-pruned, it will produce a continuous harvest of leaves with little work on your part.

Growing basil in a Tower Garden® is even easier than growing it 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 basil plants in a Tower Garden®.

Read on to learn how to: choose your basil varieties, sow seeds, transplant seedlings, pinch, fight pests, and know when to harvest.

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



THE ANATOMY OF A BASIL PLANT

- **Main Stem:** the trunk of the basil plant
- **Node:** the part of the main stem that the side stems grow from
- **Internode:** the section of the main stem between two nodes
- **Dominant Growing Tip:** the tender young shoot of the plant, a frequent site of pruning
- **Future stem growth:** the place where new stems will originate
- **Leaves**



THE ANATOMY OF A TOWER GARDEN®

- **Rockwool 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 Port:** 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

If you think all basil is the same, think again! Basil comes in many sizes and colors, each with its own flavor and growth habits.

Sweet Basils

When people use the term “basil,” they’re usually referring to the pesto varieties of the herb, such as Sweet, Genovese and Italian Large Leaf. Ranging from compact to large and leafy, pesto basils are the most aromatic of the bunch, and exactly what you’re looking for if you want to make pesto.

Purple Basils

Purple basil can be used any way you would use green basil, though it may have a slightly less powerful taste. The main reason people grow purple basil over green basil is for its beauty.

- Amethyst is the darkest of the purples
- Red Rubin is a vigorous, large leaf variety
- Purple Ruffles is a great variety with good flavor that also makes a nice garnish
- Dark Opel is a variegated variety that works great in a micro salad mix



Genovese Pesto



Amethyst Purple

Lemon Basils

As you can guess by the name, citrus basils combine the traditional sweet and spicy taste of regular basil with the zesty aroma of citrus. These compact plants with bright green leaves come in several lemon and lime-scented varieties.

Other Basils

Though many basil varieties appear identical, upon tasting you find an array of differing aromas. Some other basil varieties include:

- **Cinnamon Basil:** Combines a strong cinnamon flavor with the taste of traditional basil
- **Anise Basil:** Has a sweet licorice flavor and a leggy growth habit
- **Fine Leaf Basils:** Smaller varieties that have a more ornamental look
- **Bush Basils:** Compact basils that come in both purple and green varieties with shiny leaves that are slightly curled and very small

BEFORE YOU PLANT: Deciding When to Plant

Basil will grow well from spring through fall, although it does best with lots of sun and heat.

For most areas, the best time to plant basil 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 nighttime temperatures reach at least the low 60s. Its growth can slow down considerably if temperatures dip below 55°.

The germination range for basil is 65-70 degrees, with the optimal temperature being 68° F/20° C. A few degrees warmer than 68° and seeds will germinate quicker but they’ll be more spindly. A few degrees cooler than 68° and the seeds will germinate slower but they’ll stay shorter. The latter is the better of the two scenarios.

Many gardeners plant two crops of basil per season — one in the spring and one in the fall — for continuous young growth harvesting.

How long until you’re ready to harvest some of those spicy green leaves? In general, basil takes two to three weeks after germination (sprouting) before it is ready to transplant. It should be ready to harvest in another seven to eight weeks.

BEFORE YOU PLANT: Deciding How Much to Plant

One plant site in the Tower Garden® will produce a lot of fragrant herbs for a household. Grow more if you’re a basil lover, and dry the excess to store for winter. Or make your own pesto!

PLANTING: Seed Sowing and Germination

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

Remember: the germination range for basil is 65-70 degrees, with the optimal temperature being 68° F/20° C.

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. 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 six to eight 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 the semi-shade (a bench or table will do nicely) until the seeds have germinated. Always keep about 1/8" to 1/4" of fresh water in the bottom of the tray.

Step 8: Once the seeds have germinated (about one to five days or longer in cooler temperatures), thin down to five to six seedlings and IMMEDIATELY place outside in semi-shade for 7 to 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: After 14 to 21 days, and once the fear of frost has passed, your seedlings should be ready to transplant into the Tower Garden®!

Tower Garden® Tip: Placing basil in the upper portions of your Tower Garden® is not only visually lovely, but gives the plant room to grow upward and branch outward. It also makes it physically easy for you to prune and harvest. Basil may get as tall as 24" quickly if you don't harvest continuously.

PLANTING: Transplanting into the Tower Garden®

Generally, you can transplant your seedlings into your Tower Garden® about one to three weeks after they germinate. The exact timeframe depends on the date of the last frost in your area. You'll know your plants are ready when they have a good root system growing from the rock fiber starter plugs.

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 two to three 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 tomato plant clippings well away from your actively growing Tower Garden®.

MAINTAINING PLANT HEALTH: Manage Pests

Like most crops, basil is 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! Following are the most common pests affecting basil.



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 honey dew, 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.



Leafhoppers

Identifiable by their wedge-shaped, light green bodies, leafhoppers are a common problem for both greenhouse and field growers. They can be detected by stippling on the top of the leaves, giving the appearance of white or pale yellow spots. The damage caused is not solely cosmetic since these insects also are known to transmit viral diseases.

What to do if you have them: Botanical sprays such as neem, pyrethrum, rotenone and horticultural oil sprays are your best bet for controlling leafhoppers.



Whitefly:

Sap-sucking insects that are visible to the naked eye, 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.

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 basil.

Fusarium

Mainly affecting sweet basil varieties, fusarium is a vascular wilt caused by a fungus. Symptoms include wilted leaves, stunted plants and vertical brown stripes on the stem. These often appear late in the growing season and are first noticed on the older leaves. Disease progresses to the younger leaves resulting in plant death. In some cases, only one branch or side of the plant demonstrates symptoms.

What to do if you have it: The best defense against this disease is prevention: only buy basil seed that has been tested for the presence of fusarium wilt fungus, and choose resistant varieties if available. If the disease strikes, it's best to remove the entire plant.



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 basil.



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 spot can also 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 help keep it from spreading.

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/>

When to replace your plants:

If a plant has become too diseased despite control efforts, replace with new plants.

HARVESTING

Now comes the fun part — time to harvest those beautiful green leaves! Keep these things in mind when harvesting:

- Unlike other plants, where you get a one-off harvest, you can — and should — harvest basil continuously. Harvesting makes basil more productive and gives the plant a stronger structure.
- Once your plants have developed six to eight pairs of true leaves you may begin harvesting! Do so by pinching (with your fingers) or cutting (with scissors) stem tips to promote branching. Pinch 1/4 inch above where the plant is branching. Whatever you pinch off is your harvest.
- Sometimes you will see new leaf growth in the axil of the stem and mature leaf; this is the future branch! Pinch or cut the stem halfway between the lower pair of leaves and the growing tip. If these 2 sets of leaves are close together, you can feel the knob just below the growing tip, and gently roll it off the tip of the stem, which is known as a soft pinch.
- Basil is a prolific grower! Once you have harvested from your plants twice, you may need to harvest using the above procedure as much as twice a week. When your basil plant is established with several branches, don't forget to harvest the lower, larger leaves at the base of the plant. They are very flavorful!
- Keep your basil from flowering for as long as possible through regular pinching! When the plant flowers, it signals the end of the growing cycle. The leaves also become less sweet and more bitter during flowering.
- To harvest an entire plant, cut the whole plant from the Tower Garden® plant site.

STORING

If you have too much basil to eat fresh, it's time to store it. There are two main methods of basil storage: drying and freezing.

Drying: If you have harvested an entire plant, split the stems into two bunches. Tie the branches of each bunch together well with twine or yarn. Drape each bunch upside down over a hanger or wall hook in a dry, warm area.

If you have harvested individual basil leaves, place them on a cookie sheet or plate and cover with cheesecloth. Air dry the leaves for several days or until they crumble in large pieces.

Freezing: Basil freezes well. Place whole stem tips in a freezer bag without rinsing, or, if you do rinse, allow them to drain well before putting them in the bag.