



**TOWER**  
**GARDEN**

BY JUICE PLUS+®

## GROWING GUIDE: SWISS CHARD

Have you been meaning to include more greens in your diet? What could be more convenient than having them growing within easy reach?

Swiss chard is an adaptable vegetable — you can use the leaves in any recipe that uses spinach, and the stalks make a good stand-in for asparagus or celery. Swiss chard is delicious in a salad or a quiche or simply sautéed with a little lemon juice and sprinkled with Parmesan cheese.

Swiss chard is very healthy, too. It's an excellent source of vitamins C and K, and is rich in vitamins A and B, heart-healthy omega-3 fatty acids, and minerals such as calcium, copper, iron, manganese, phosphorus, and potassium. Swiss chard's bright colors — green leaves with stalks and veins in almost every color of the rainbow — make it a beautiful addition to any garden setting, while its flavor and nutritional benefits make it a welcome dish at any table. A wonderful crop for beginning gardeners, Swiss chard will produce a continuous harvest of leaves with little work on your part.

Growing Swiss chard 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 Swiss chard in a Tower Garden®. Read on to learn how to choose your Swiss chard varieties, sow seeds, transplant seedlings, fight pests, and know when to harvest.

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



### THE ANATOMY OF A SWISS CHARD PLANT

- **Stem:** The main stalk that connects the leaves to the roots
- **Leaves:** The green, edible part of the plant
- **Growing crown:** The base of the plant from which the leaves grow

### 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

There are many varieties of Swiss chard, based on stalk and vein colors.

### White Stalk

White-stemmed varieties are highly productive and resist bolting, making your growing season last longer.

- **Fordhook** has medium-green crinkly leaves. It's the most common type of green Swiss chard.
- **Bionda di Lyon** has pale-green smooth leaves with less fiber than other types of chard, so the plant is tender, with a mild flavor. Since it bolts quickly if it gets too big, it's best to use Bionda di Lyon for baby leaves only.

### Red Stalk

If you want something more flamboyant, these varieties with their green leaves and rosy red stems and veins might be for you. They're nutritious, too. The stems and veins in red-stalked Swiss chard are a unique source of phyto-nutrients called betalains.

- **Rhubarb chard** has deep-green, crinkly leaves with bright crimson stalks. This plant is frost-sensitive, unlike other types of chard.
- **Magenta Sunset** has medium-green smooth leaves with a mild flavor; the baby leaves are perfect for mixed green salads.

### Multi-colored Stalk

These brightly colored varieties are truly gorgeous and productive, too. You can buy Swiss chard with purple, red, pink, orange, or yellow stems individually or in pre-packaged mixtures. Pick your favorite color or create your own mix. Planting these is like growing your own rainbow!

- **Bright Lights** is an aptly named mix. The green and bronze leaves are lightly crinkled, and the stems range from orange and yellow to purple and pink. Each color has its own unique taste, although as a whole, Bright Lights is milder than regular chard. Experiment and find your favorite! While you can grow Bright Lights all year, this variety is more sensitive to frost than regular chard.

## BEFORE YOU PLANT: Deciding When to Plant

Growing Swiss chard is easy, especially if you live in a temperate climate. It will grow well from spring through fall, although it is considered a cool season crop with an optimal growing temperature of 50°–70°.

Feel free to get a jump-start on the season, sowing Swiss chard 2–4 weeks before the anticipated date of the last frost...it can handle it a little nippy! (Two varieties, rhubarb chard and Bright Lights, are more sensitive to frost.)

The germination range for Swiss chard is 55°–75°. A single sowing can last throughout an entire gardening season, but you can also plant Swiss chard in the spring and then again in the fall to ensure you're getting the best the plant can provide.

While it can handle some heat, Swiss chard will thank you for a little bit of shade during the hottest part of the summer.

How long until you're ready to harvest some of those tender green leaves? In general, you can transplant Swiss chard 2–3 weeks after germination (sprouting). It should be ready to harvest in another 4–6 weeks.

## PLANTING: Seed Sowing and Germination

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

**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:** After 2–3 weeks, or when the plants have 4–6 true leaves, your seedlings should be ready to transplant into the Tower Garden®! Most varieties of this crop are also able to tolerate a light frost.

## PLANTING: Transplanting into the Tower Garden®

You can transplant your seedlings into your Tower Garden® about 2–3 weeks after they germinate. 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 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, Swiss chard 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! Here are some of the most common pests affecting Swiss chard:



### 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.



### Leaf Miners

Leaf miners are small gray flies that lay their eggs on the underside of Swiss chard leaves. The eggs hatch into small, pale maggots that feed between the leaf surfaces. The damage caused by feeding appears as winding trails throughout the leaf tissue. The trails then merge together to form light-colored, dead areas on the leaves.

**What to do if you have them:** Remove and immediately dispose of infested leaves before the larvae are able to develop into adult flies. Beneficial insects like ladybugs and parasitic wasps will attack leaf miners and decrease their populations. Use botanical sprays such as horticultural oil and neem oil sprays for additional control.



### Flea Beetles

Adult flea beetles are small and vary in color from black to bronze to metallic gray. They feed on Swiss chard leaves, creating small, irregular holes that make the leaves appear to have been shot. Excessive feeding can cause the leaves to wilt.

**What to do if you have them:** You can control flea beetles by using botanical sprays such as insecticidal soap, pyrethrum, rotenone and horticultural oils. You can also drape a row cover cloth over the Tower to protect the plants from damage. (Row cover cloths are made of a gauzy fabric that allows sunlight in, but keeps pests out.)

### 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 Swiss chard.



### Downy Mildew

A common fungal disease of Swiss chard, downy mildew looks like fine white cotton or frosting and tends to infect the lower leaves of the plant first. This disease can spread rapidly and kill plants during cool, moist conditions.

**What to do if you have it:** Be sure to grow from disease-free seed or purchase healthy seedlings. Proper care and air circulation will help maintain your plants' health because diseases are more likely to strike stressed plants. If you've grown Swiss chard or spinach in the past, make sure that the area is clear of the previous crops' plant debris, and practice good sanitation measures between crops. You can protect plants against downy mildew infection with copper sprays.



### Cercospora Leaf Spot

A fungal disease known to affect all plants in the beet family, this leaf spot begins as small brown flecks surrounded by a reddish-purple halo. As the disease progresses, these spots enlarge, with the center turning gray and cracking, resulting in a hole in the leaf with the halo intact. Eventually the entire leaf will turn brown and die. Lower leaves of the plant are infected first and exhibit the most severe symptoms. Leaf spot spreads when there's heavy dew at night followed by dry days. Its spores are spread mainly by wind.

**What to do if you have it:** Be sure to grow from disease-free seed or purchase healthy plants. Proper care and air circulation will help maintain your plants' health because diseases are more likely to strike stressed plants. If you've grown Swiss chard or spinach in the past, make sure that the area is clear of the previous crops' plant debris, and practice good sanitation measures between crops. Destroy any plants exhibiting leaf spot symptoms immediately through disposal or burning.

### 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.

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## HARVESTING

It's time for that healthy, colorful chard to hit your table! Keep these things in mind when harvesting:

- Leaves are the sweetest and most tender during the cooler temperatures of spring and fall and have the most flavor when they are allowed to mature until the plant is 50–60 days old.
- Begin harvesting leaves when they are 4"–5" long by cutting the leaves near the base, being careful not to cut the stems of the inner leaves.
- Harvest the mature leaves first, leaving smaller leaves for continued production.
- Pick 3–5 mature leaves from a plant at a time. That way, you won't over-harvest and reduce the overall productivity of the crop. Be sure to leave the growing crown (the place from which the leaves grow, at the base of the plant) intact.
- Don't be afraid to pick often! Frequent picking helps to stimulate the production of new leaves.
- Twist off and compost old leaves that have lost their glossy sheen.
- After you pick the leaves, rinse them with cool water immediately, shake off the excess moisture, and store in plastic bags in the refrigerator for up to four days.
- Got too much? Excess chard is easy to blanch and freeze, just like spinach. You can also dry chard leaves as you would a spice like basil, and use the flakes to add color and nutrition to winter soups and stews.
- Don't like stems? You will if they're pickled! You can pickle chard stems, either alone or with the leaves, with a standard vinegar-sugar brine before sealing the jars in a water bath canner.