

GROWING EDIBLES IN SMALL SPACES

KEY CONCEPTS

- Make sure you start with nutrient rich, clean soil with good drainage.
- Choose a site close to your house (the more convenient the better!), with full sun for 6-8 hours a day (cool season veggies, salad greens and herbs can manage with a little less sun but most warm-season like tomatoes, pepper and beans need lots), and protected from intense wind.
- Watch for overcrowding during humid/wet summers, especially when experimenting with Square Foot or Square Inch Gardening (good air circulation reduces disease and mold risks) and avoid over-fertilizing; too much can cause burn or excessive growth in foliage rather than fruits.
- For crops that are short-lived, practice successive planting (either reseeding or replacing with fresh young plants), and rotate all crops according to what time of year is best for each.
- Think of vegetables as ornamentals – they can add texture, height, color and even beautiful blooms.
- Interplant with herbs and flowers to add beauty and reduce pest issues.

PROPER SOIL, WATER & FOOD

- Veggies like nutrient-rich, loose soils with good drainage. A pH of about 6.5 is ideal for most veggies (eggplant and potatoes prefer slightly more acidic soils, and beets prefer slightly more alkaline, but they will do OK in pH 6.5 soils).
- Consistence is key in watering vegetables. If your veggies are continually allowed to dry out and you dose them with a really heavy watering to 'perk them back up', you can experience a range of problems such as bloom droop, poor root development, leaf curling, rot and overall weakening of the plant. If the plant's health is compromised, then it becomes more susceptible to pest and disease issues. If you know you won't be able to keep up with daily watering in the warmer months, it may be worth purchasing self-watering planters or installing a drip line system in your garden bed for consistent irrigation. You also don't want veggies to be sitting in continually wet soil; try sticking your finger tip about 1.5" down in the soil; if it is dry below the surface then you need to water it.
- Your plants can survive and produce vegetables without any supplemental feeding, but if you do fertilize and/or add compost regularly, you will have much healthier plants and much higher yields of produce. This is especially pertinent to container gardens - the plants aren't naturally getting nutrients from the ground, frequent watering can deplete nutrients from the soil, and there are typically more plants in a smaller amount of soil. It is best to prep your garden beds or containers with compost or granular starter fertilizers before planting, then feed your vegetables as often as weekly with a water-soluble fertilizer or compost tea (follow directions on containers, avoid over-feeding).
- To avoid carrying over potential disease or pest issues from year to year, either completely replace your soil in all containers/raised beds each spring, or at least mix in some fresh compost or potting mix to give it a nutritional boost and break up any remaining roots or hardened soils from previous years to aid in drainage.

CREATING A RAISED BED

- If you have limited space or don't feel like breaking ground, try building small raised beds or using containers. Experiment with using more vertical space – fences, deck or balcony walls and latticing can support climbing plants.
- Raised beds can be made of a variety of materials – wood, stones, concrete blocks, bricks, and recycled corrugated metal are all easy and relatively inexpensive. You can purchase raised bed corners that allow you to simply slide or screw wood planks in place. You can also buy entire premade raised bed kits online in a variety of designs, sizes and materials, including waist-high versions (Gardeners Supply). Cedar holds up the best to water and elements.

- When determining the depth of your raised bed, you need to consider what you will be planting. If you only plan on salad greens and a few herbs, you could get away with a bed of only 6-8" deep. Most vegetables require more depth for ideal growth and root health; a depth of 10-20" is ideal (especially for tomatoes).
- Raised bed size obviously depends on how much space you have, but another important factor is ease of use. You should be able to reach at least half way across your bed from the side, so that you don't have to walk inside to work in it (walking on the soil compacts it). For most people, a width of no more than 4 feet is ideal – you can make 4x4 squares or rectangles.
- Before building the walls of your raised bed, start with a clean base. If you have grass beneath the area, cover it with weed mat – this prevents weeds from growing through and the grass will rot and provide nutrition to the soil. It also helps to lay down some kind of hardware cloth or wire mesh to keep burrowing rodents away from roots.

CREATING CONTAINER GARDENS

- In general, the bigger the container the better. Smaller containers dry out faster and need daily or twice-daily watering in the heat. Depending on what you want to plant, you need to consider the depth of the pot to ensure that plants with deeper root systems will have the proper room to develop. You also want to consider weight – if you may be moving the pot after it has been planted, then consider the original weight plus plants and wet soil (you can also purchase trays to place under pots with wheels for easy moving). Make sure you use frost-proof pots for anything remaining outside year-round.
- Remember to place your pots in a protected area with lots of sun – wind can batter foliage and dry pots out faster. Placing large and small pots close together can help to protect them and also helps to raise humidity and keep plants happier. You can even buy self-watering planters that extend time in between waterings.

EDIBLES THAT CAN GROW IN CONTAINERS (instructions generally apply to raised beds too)

HERBS

- All herbs can grow in containers – some like fennel and dill can get pretty tall, but just make sure they have enough depth and provide support if needed. Cilantro needs part shade in the heat of the summer (does better in cooler temps.) and benefits from successive planting. Basil needs to have its flowers pinched off or they interfere with leaf production and flavor. Spearmint & peppermint are best in a container because they spread so aggressively. Sage should always be planted with its crown set slightly above the soil surface and both sage and lavender need exceptional drainage as they are prone to mildew and rot issues. Most herbs are very attractive and often have lovely edible blooms – try mixing them with veggies for enhanced appearance and pest resistance.

FRUITS

- Blueberries: Dwarf or compact varieties are easiest to grow in containers, but most any blueberry can grow in a pot if it is large enough (20+” tall/wide). The good thing about growing blueberries in containers is you can easily amend the soil to their preferred acidity. Plant 2-3 close together for cross-pollination and best fruit production. If in the ground or in a large container, make sure you don't plant other plants around the base of the blueberry, and cover the crown with a few inches of mulch to retain moisture. Blueberries like some feeding and prefer organic matter such as aged compost. You can occasionally prune the older wood from blueberries, as they fruit on younger stems.
- Strawberries: Very easy to grow in containers (any type will work) as well as in the ground. They do not require very deep soil and there are several ornamental varieties with tasty fruit and pink blooms. ~10 plants can provide 5-10 quarts of berries once established (higher production in beds). Need excellent drainage, regular water.

- Figs: Figs are easily grown in pots, but can get pretty large over time. Growing in a pot ~20" tall/wide can safely limit root space and put more energy into fruit production. They're drought tolerant, but pots dry out quickly, so keep an eye on them. Container figs do best maintained at 5-6' max height. Prune stems back after main harvest to limit size. Protect roots from cold winters by moving containers against a building, surrounding bases with mulch or bringing into an unheated garage. Do not move outdoors too early, as a frost could damage the buds/fruitletting.
- Melons: 'Bush' varieties are best for containers, vining varieties are best in raised beds with trellising. If using trellising, plant a smaller variety of vining melon and ensure the trellis is anchored in the ground or tied to a building. If using a bush variety, plant in a large container and allow space around it for plants to cascade and trail over sides onto ground. Mulch around plant bases to help maintain moisture if in a pot. 2 plants can feed 2-4 people.

VEGGIES

- Tomatoes: Some tomatoes are "determinate" types, which will stop bearing after a month. Most are "indeterminate" kinds, which will keep flowering and setting fruit until killed by frost, although colder weather will slow production. Determinate bush varieties (more compact, more fruit ripening at once) are easier to grow in containers as they are shorter and bushier, but indeterminate vining tomatoes can also be grown in pots. Staking is best for all varieties, but larger vining types will need a tall, strong trellis (10+'). Cherry tomatoes tend to be smaller plants and work well in pots and hanging bags. When planting tomatoes, clip off the bottom branching stems & plant deep in the soil to encourage more roots and a healthier plant. 6 plants can provide enough tomatoes for a small family (fresh & canned). Just 1-2 cherry or grape tomatoes can provide a large crop. Make sure you provide at least 2' between plants and give them lots of sun and regular water (if allowed to dry between waterings, cracking may occur.)
- Peppers: Most pepper varieties are naturally compact, so they make easy container plants. Add a small support stake to the pot for larger varieties. They are also ornamental, offering a range of colors, shapes and sizes. Peppers like consistently moist soil, but not wet, and lots of sun. Do not plant prior to nighttime temps of 50+.
- Salad greens: Salad greens/lettuces only require a half foot of soil, but make sure they don't dry out & keep them in part shade in the heat of the summer. Successive planting is key to having fresh greens all season – either sow or plant new starters every 3-4 weeks. Lettuce, arugula and spinach are all very fast-growing from seed and are good successive crops for cooler temps in spring and fall. You can also cover rows with mesh or shade cloth to help extend harvests in warmer months. Spinach in particular really appreciates extra fertilizer.
- Cooking greens: Require deeper soil than lettuces. Swiss chard, mustard & kale are the easiest. Remember that they cook down a lot, so to grow enough for regular harvesting, you will need multiple large containers. Mustards grow very fast, so can be reseeded or planted several times in cooler months. Cooking greens can make fantastic ornamentals. Many of them (especially kale and collards) are quite cold hardy and can survive much of the winter.
- Seed Potatoes: Fill container with 6+" soil, place small seed potatoes 3-4" apart & cover with 2-3" soil or compost. (Wait for the potatoes to start sprouting before planting, and if you are cutting up larger potatoes, make sure each piece has 2-3 eyes). When plants are 6" tall, mound a few more inches of soil or compost over the base of plants (cover about 1/3 of the bottom growth). Repeat this mounding process every 1-2 weeks until reaching the top of the container. Harvest potatoes any time after they start flowering (or wait until the foliage yellows). Growers Supply has 'potato grow bags' that work well, or you can try 1/2 whiskey barrels. Blooms and foliage are quite attractive!
- Eggplant: Dwarf or patio varieties are easiest, but all types grow well in containers. They tend to fruit earlier than in the ground & have fewer disease issues. Keep well watered in the heat. A great ornamental as well!
- Beans: Beans are best direct sown – plant individual beans 4" apart and sow new ones every few weeks for continual harvest. Be careful not to plant beans too early as cold can cause rot. Bush beans (especially compact varieties) are easiest to grow in pots. Scarlet Runner Beans can be mixed in with others for amazing blooms but very small yields. Pole beans are more productive over the long run than bush beans, but they are a bit more involved when planted in a container. Train the 6- to 8-ft.-tall vines on a trellis or tepee made from bamboo poles.
- Radishes: Easy to grow in pots – keep in part shade in the heat. Don't transplant well – direct sowing is best.

- Sweet potatoes: A benefit of growing them in pots as that they aren't as likely to suffer slug damage. Ornamental sweet potato vines actually produce tasty potatoes as well! They work well in whiskey barrels or clay pots, trailing attractively. Plant slips ~1' apart after danger of frost, in well-draining, fertile soil. Water frequently, add compost.
- Peas: Shelling Peas, Sugar Snap & Snow Peas all grow well in containers with a trellis. Plant in early spring or early fall as they don't produce well in the heat. Peas are best direct sown, spaced 5" apart. Try successive sowings every other week for more continual harvests. They appreciate occasional fertilizer.
- Beets: Grow easily in containers or ground. Harvest beets at 2" diameter for sweet flavor (get woodier when bigger), and the beet tops make great cooking greens (don't cut all at once or you may damage the plant).
- Carrots: Grow easily (and faster) in pots than in ground. Don't transplant well – direct sow early spring, harvest August-October (or mulch with hay/leaves & harvest through winter).
- Green Onions: Easier to grow than regular onions and require less spacing – only 1" between plants. You can harvest the tops of the onions (when 6-8" tall) and leave an inch of green above the bulb to allow for regrowth.

EDIBLES THAT CAN BE GROWN IN SMALLER SPACES WITH SOME EXTRA WORK

- Cucumbers: Compact bush varieties of cucumber are best for containers. Vining cucumbers work best in raised beds on trellises. Plant in 6" tall hills of soil, space 2 feet apart and weed frequently. Wait until temperatures are consistently warm. Train on trellises at an angle, so cucs dangle below for easy harvest and you can plant other items (such as lettuces) under the angled trellis where they will get some protection from hot sun.
- Summer Squash: More compact than winter squash (which really require a big bed), but still requires a lot of room overall. Needs a strong, grounded trellis or a large container that it can spill from (1/2 whiskey barrel). Harvest zucchini and yellow squash when fruit is between 7-12", and scallop squash at 5-6" wide for best flavor. Try stuffing and baking any that get overly large. Blooms are also great stuffed and fried or baked. Look for bush varieties of yellow squash, zucchini and White Scallop for more compact growth. 2-3 plants can feed 2-4 people.
- Broccoli & Cauliflower: Plant in early spring or late summer for harvests in cooler temps (at 75+ deg. they get leggy). After initial head is cut, continually harvest the smaller side shoots for prolonged production. Can be grown in large containers (3g pot for *each plant*), but grow best in raised beds with more space.
- Onions: Can sometimes be a bit tricky. Require more space than green onions, with plants 4" apart and if planted in rows, make rows at least a foot apart. Onions do best in long days of full sun, with consistently moist, good draining soil. They prefer softer soil texture and high nutrition, so use a hummus base or add fertilizer regularly.
- Okra: A bit challenging to grow in containers, as they need a lot of space/depth. Need a 5 gal. bucket or larger for each individual plant. 4 plants produce enough pods for 2-3 people. A great ornamental mixed in pots or beds with other attractive veggies as it provides height and beautiful hibiscus-like blooms. Billy Bob Red has burgundy pods.
- Cabbage: Only get one head per square foot, but Asian Cabbages can be planted a bit closer. Can be ornamental.

BEST GROWN IN LARGER BEDS: Corn, Winter Squash, Brussels Sprouts, Asparagus

MINIMUM SOIL DEPTH FOR VEGGIES IN CONTAINERS OR RAISED BEDS

5-6"	Chives, lettuce, radishes, other salad greens, basil, coriander
7-9"	Bush beans, garlic, kohlrabi, onions, Asian greens, peas, mint, thyme
9-10"	Pole beans, carrots, chard, cucumber, eggplant, fennel, leeks, peppers, spinach, parsley, rosemary
10-12"	Beets, broccoli, okra, potatoes, corn, summer squash, dill, lemongrass

VEGETABLE & HERB PLANTING SCHEDULES (For Veggie Starts Unless Otherwise Noted)

Early Spring (March) (Leave plants outside for several days to acclimate before planting.)	Lettuce, Arugula, Spinach, Broccoli, Cauliflower, Snow & Sugar Snap Peas, Dill, Cilantro, Borage, Chives, Radishes (direct sow), Parsnips (direct sow), Parsley, Swiss chard, Mustard, Collards, Kale, Beets (Highlighted plants can be sensitive to frost until established.)
Spring (Late March-April)	Radicchio, Asian Greens, Potatoes, Beans
Late Spring-Summer (night temps above 50 °)	Tomatoes, Peppers, Cucumbers, Eggplant, Okra, Summer Squash, Basil
Late Summer/Early Fall	Lettuce, Mustard, Asian Greens, Swiss chard, Collards, Kale, Spinach, Arugula, Broccoli, Cauliflower, Radicchio, Parsley, Cilantro, Beets, Direct Sow: Turnips, Radishes & Carrots
Hardy to 25° (mature plants)	Arugula, Beets, Cauliflower, Lettuce, Mustard, Spinach, Swiss chard, Green Onions, Parsnips
Hardy to 20° (mature plants)	Cabbage, Broccoli, Brussels Sprouts, Carrots, Kale, Collards, Leeks, Chives, Turnips

* Hot weather can cause many greens to go to seed or taste bitter. To lengthen your harvests, make successive plantings, harvest young leaves often, protect from hot sun, keep well watered and try heat-resistant varieties.

PAINTERS VEGGIES, FRUITS & HERBS THAT CAN BE PLANTED IN SMALL SPACES

VEGGIES (highlighted are best option)

Arugula - Astro

Beet - Detroit Dark Red, Red Ace, Touchstone Gold

Broccoli- Early Dividend, Premium Crop

Cauliflower - Early Snowball

Celery- Golden

Collards - Champion

Cucumber – **Bush Crop**, Homemade Pickle, Burpless Orient Express

Eggplant – **Patio Baby**, **Ichiban**, Black Beauty, Gourmet Long Orient Express

Fennel - Bulb

Honeydew - Sweet Delight

Kale – Lacinato, Red Russian, Vates

Leek - Electra Green

Lettuce – Buttercrunch, Paris Island, Red Sails, Salad Bowl

Mustard - Red Giant

Onion - Red Burgundy, White Sweet Spanish, White Bunching (green onion)

Pepper - Bell Boy, Big Red, Early Sunstation, Golden Cal. Wonder, Keystone Giant, Red Knight

Pepper, Hot: Cayenne Long Slim, Habanero, Hungarian Hot Wax, Jalepeno, Poblano, Serrano, Sweet Banana, Thai Hot, Black Pearl (ornamental)

Spinach - Smooth Leaf, Tye Savoy

Squash, Summer: **Tasty Zucchini**, **Scallop Early White Bush**, Yellow Crookneck, Yellow Straightneck,

Swiss Chard, Bright Lights, Gourmet Burgundy

Tomato - Amish Paste, Better Boy, **Better Bush**, Big Beef, Big Boy, Black Russian, Box Car Willie, Brandywine,

Brandywine Yellow, Cherokee Purple, **Cherry Basket Boy**, Early Doll, German Johnson, **Grape Juliet**, Iron Lady,

Lemon Boy, Marglobe, Mountain Fresh, Mr. Stripey, Mt. Fresh Plus, **Patio**, Pink Girl, Polish Linguisa, Roma,

Rutgers Org., **Sweet Million**, **Tiny Tim**, **Yellow Pear**

Watercress

FRUITS

Blackberry – Chester, Natchez, Ouachita (self fertile, but best production with 2+ plants)

Black Mulberry (self fertile, berries drop to ground when ripe so plant where you don't mind a mess)

Blueberry – Chandler, Patriot, Spartan, Toro, Northsky, Sunshine Blue, Top Hat, Polaris, Pink Lemonade (2+ best)

Cantaloupe – Early Delicious (best allowed to trail rather than trained to trellis as fruits can get heavy)

Fig – Chicago Hardy (self-fertile)

Grape – Concord Seedless, Fredonia, Niagra (plant in large pots or raised beds, train vines up trellising/supports)

Honeydew – Sweet Delight (best allowed to trail rather than trained to trellis as fruits can get heavy)

Strawberry – June Bearing

Watermelon – Sugar Baby (smaller fruits can be grown on trellising, but best allowed to trail)

HERBS – All of them!



Square Foot Gardening Method

OUR METHOD

Square Foot Gardening is a simple method for planting in a specific way in a raised bed garden. There is a unique soil mix recipe recommended for best growth, and you can mix it yourself.



Step one: Build a box

Step two: Fill with Square Foot Gardening potting soil

Step three: Add a grid and start planting

The Box – build a frame from any non-treated, 6 inch wide lumber – or other similar material. When you place the box on the ground be sure to first put down weed mat or landscape fabric to prevent weeds from growing into your garden.

Best Size – 4x4 box, but be creative. As long as you don't make your frame wider than 4 feet, you can design your own look. Kids have shorter arms than adults so be sure to make the frame no wider than 3 feet for children's gardens.

HOW TO MAKE SQUARE FOOT GARDENING POTTING SOIL

1/3 Coarse Grade Vermiculite (Lowe's, etc)
1/3 Spagnum Peat Moss, broken up/shredded (Lowe's, etc)
1/3 Blended Compost
(Should be measured by volume, not weight.)

** Our bagged potting mix at Painters is the same we use for all of our potted plants, and the mix is very similar to the above composite. If you don't have easy access to the above ingredients, try mixing 2 bags of our soil (which has vermiculite & peat moss) with one bag of our organic mushroom compost. **You will likely get the best results by following the above recipe exactly, as it has been tried and true by many square foot gardeners!***

Compost Tips – To make a blended compost, mix up a few different kinds of purchased compost ingredients – such as worm castings, mushroom compost or aged manure. Or better yet, make your own compost with a healthy, balanced mix of yard waste and food/home waste.

For really detailed instructions on making your own compost, visit our website "Advice" page. It's a really easy and ecofriendly way to get rid of yard and food scraps and have a source of free fertilizer!

Watering Tip – it is critical to moisten the SFG potting soil 100% before planting – that means you can squish a handful and it stays together but no water will drip out of your fingers.

HOW TO PLANT IN THE SQUARE FOOT GARDENING METHOD

There are four spacing guidelines:

Extra Large – one plant per square for 12 inch spacing

Large – 4 plants per square for 6 inch spacing

Medium – 9 plants per square for 4 inch spacing

Small – 16 plants per square for 3 inch spacing.

Use the seed packet for seeds or labeling on purchased plants to find out what spacing your plant needs. A tomato or green pepper plant should be planted one per square, while radishes and carrots can be planted 16 per square. The grid is what makes your raised bed a Square Foot Garden – it is essential to the planning and high production of your garden.

THE SQUARE INCH GARDENING METHOD - FIT MORE PLANTS IN YOUR SMALL SPACE

Square inch gardening is a term coined by the Urban Homestead of California, used to describe their method of growing many plants packed closely together, emulating how plants grow in nature. If seeding directly, they sow seeds much closer together than recommended on seed packets. Spacing plants closer together acts like a "living mulch" - preventing evaporation from the soil and saving watering costs. They also plant multiple layers; bigger vegetables like broccoli or peppers are planted with a carpet of greens - lettuce, arugula, etc., underneath. With this type of technique the green carpet acts like a living mulch, preventing weeds and keeping the soil moist.

This method of growing requires one to experiment, as each garden's growing conditions are different – if it is a really rainy, humid summer, you may have to thin the greens/cover crops more thoroughly to prevent mildew issues.

The Urban Homestead

A highly productive city farm demonstrates how to grow large numbers in small spaces!

Garden Size: ~ 1/10 acre (3,900 sq.ft. / ~ 66' x 66')

Garden Diversity: 350+ vegetables, herbs, fruits & berries

Productivity: Up to 6,000 lbs harvest annually on 1/10 acre

Practices: Vertical gardens, container gardens/raised beds, mulching/no tilling, Integrative Pest Management & organic treatments, Square Inch Gardens



REFERENCES/ADDITIONAL READING

Online References: organicgardening.com, squarefootgardening.org, ufseeds.com/Garden-Planting-Guide.html, naturalgardening.blogspot.com, motherearthnews.com/crop-guide-growing-organic-vegetables-fruits

Supersod.com – local business that offers square foot garden mix and premade raised beds delivered to your home

Gardeners.com – Gardener's Supply offers a huge selection of planters, containers, raised beds and grow bags

Books: All New Square Foot Gardening, The Edible Balcony, Bountiful Container, The Vegetable Gardeners Container Bible, Simple Steps to Success: Fruits and Vegetables in Pots, Edible Landscaping