

Vegetable Gardening for Beginners

Pick the Right Location

Picking a good location for your garden is absolutely key. A subpar location can result in subpar veggies! Here are a few tips for choosing a good site:

1. **Sunny spot:** Most vegetables need 6 to 8 hours of direct sunlight per day. There are a few veggies (mostly the leafy ones) that will tolerate some shade.
2. **Drains well and doesn't stay wet:** If you have poorly drained soil where water pools, plant veggies in a raised bed or raised row for improved drainage. Wet soil means wet roots, which can turn into rotted roots. If you have rocky soil, till and remove the rocks, as they will interfere with root growth and make for weaker plants.
3. **Stable and not windy:** Avoid places that receive strong winds that could knock over your young plants or keep pollinators from doing their job. Nor do you want to plant in a location that receives too much foot traffic or floods easily. Shelter from winds is helpful for most crops, especially peppers, eggplant, peas, beans, and any climbing vegetables.
4. **Nutrient-rich soil:** Your soil feeds your plants. If you have thin, nutrient-poor soil, you'll have poor, unhealthy plants. Mix in plenty of organic matter to help your plants grow.
5. **Water:** As a beginner, you may want to keep your garden a little closer to your house, making maintenance, weeding, watering, etc. much easier than if you have to walk across a giant backyard. It also will make it easier to see if you have any critters on the prowl looking to eat your peas!
6. **Air Circulation:** Good airflow will encourage sturdy growth in your plants and help keep fungal diseases at bay. It also makes the garden less hospitable to insect pests such as whitefly that prefer a stagnant, humid environment. Bear in mind that solid walls or fences may provide shelter but they can also cause the wind to form destructive turbulence on the leeward side, so don't plant too close to them. Hedges and open or woven fences are more effective, as they filter wind rather than deflect it.
7. **Frost:** Cold air is heavier than warm air so it settles in low points in the garden and near structures such as walls and fences. Avoid planting in these potential frost pockets; they can delay the time when you can start sowing seeds and they can damage young growth.

Choosing a Plot Size: Start Small!

Remember: *It's better to be proud of a small garden than be frustrated by a big one!*

One of the most common errors that beginners make is planting too much too soon—way more than anybody could ever eat or want! Unless you want to have zucchinis taking up residence in your attic, plan your garden with care. Start small, and only grow what you know you and your family will eat.

Size of Garden

1. If planting in the ground, a 10' x 10' garden (100 square feet) is a manageable size. Pick 3 to 5 of your favorite vegetables and buy 3 to 5 plants of each one.
2. If planting in a raised bed, a 4' x 4' or 4' x 8' is a good beginner size. Raised beds also warm up earlier in the spring, giving you a head start on the growing season.
3. If you want to go bigger, a 12' x 24' garden in the ground is probably the biggest a first-timer should go. For example, a garden that feeds a family of four could include: 3 hills of yellow squash; 1 mound of zucchini; 10 assorted peppers; 6 tomato plants; 12 okra plants; a 12-foot row of bush beans; 2 cucumbers on a cage; 2 eggplant; 6 basil; 1 rosemary, and a few low-growing herbs such as oregano, thyme, and marjoram.
4. Whatever the size of your garden: Every four feet or so, make sure that you have paths that allow you to access your plants to weed and harvest. Just make sure that you can reach the center of the row or bed easily without stepping on the soil.

Getting the Right Garden Tools

It's time to build out your gardening tool kit. If there's one piece of advice you need, it's that good tools are worth their weight in gold. The price tag might be a little higher, but they will last forever and make your work much easier. That means you should try not to buy anything plastic. While the price might be more attractive, it will likely break before the end of the season the moment you hit a stubborn root.

1. **Big garden tools:** The rake, hoe and shovel are your workhorses in the garden, and you want a strong, long handle with a good connection between the wood handle and the metal blade or rake. Your garden rake is not the type you use for leaves in fall. This is the type that is about a foot across and has evenly spaced tines. Other tools: hula hoe, warren hoe, digging fork, spade, cultivator and leaf rake.
2. **Handheld garden tools:** Essential hand tools include a good trowel, a hand pruner and a tool for working the soil next to the plants and for weeding. Hand tools come in many designs. Today, you can buy tools with an ergonomic design. They have different designs for tilling including a hoe type blade, a three-tined cultivator or a shuffle type blade that cuts the weeds off below ground. Every gardener has their favorite and you will, too, after you garden for a while. If you are starting from scratch with garden tools, it's a great idea to hit up end-of-season sales and even estate sales. Often, they will have really good quality garden tools for sale at much less than what you would have to pay for new. Other hand held tools: tape measure, gloves, knife, hammer, scissors, weeder, bulb planter, dibble, hose nozzle, coarse file and pliers.
3. **Other items:** twine, stakes, plant markers and pens, rototiller, garden cart, wheelbarrow, mantis tiller, bucket and organizer.

Prepare your garden's soil

What's growing where you plan to start your garden plot? It's time to get it out of the way. Just trust us—if you're removing sod, rent a sod cutter. This machine has a blade that cuts the sod underground so you can roll it up and either use it in another part of your yard, or you can compost it. You can remove sod with a shovel, but it is a very labor-intensive job. Once the sod is removed, the ground needs to be tilled. You can rent a tiller, also, but you might be able to borrow a tiller from a gardening neighbor or relative. While you till or turn the soil with a shovel, remove any stones, roots or other debris.

This is a good time to have your soil tested. There are kits you can purchase online to test the soil yourself, or you can take a soil sample to your local cooperative extension for testing. The test will tell you the pH of your soil. Most plants prefer a neutral pH. For those plants that prefer a slightly acidic or slightly alkaline soil, you can amend the soil just by that plant. Your soil test will also tell you if the soil contains enough of the needed nutrients for plants to grow.

Colo State University Soil Testing Lab <https://agsci.colostate.edu/soiltestinglab/>

Once you have an idea of the nutrients in your soil, you can add organic material. The richer the soil, the healthier the plants that grow in the soil. Add lots of compost and aged manure and mix it into the existing soil. Your goal is to have a rich loam that will just get better year after year.

If you have clay soil, add coarse sand (not beach sand), compost, and peat moss.

Soil Amendments

If your soil needs replenishing, these materials can be of help:

- Bark, ground: made from various tree barks; improves soil structure
- Compost: excellent conditioner
- Leaf mold: decomposed leaves that add nutrients and improve soil structure
- Manure: best if composted; good conditioner
- Peat moss: conditioner that helps soil retain water
- Topsoil: usually used in combination with another amendment for added soil

Remember: You should build your soil, but also you have to work with nature. If you have cold, clay soil, it takes longer to warm up in the spring.

Choosing Vegetables

As a beginner, start by choosing easy vegetables that are also productive.

Lettuce:

Lettuce is cool-season crop that grows well in the spring and fall in most regions. This crop is perfect for beginners; it's easily sown by seed directly in the soil as soon as the ground can be worked. Because lettuce grows quickly, the best approach is to plant a small amount of seeds at a time, staggering the plantings.

Lettuces are a great leafy green because they grow quickly, produce for a long time, and are not very demanding as long as you keep the plants sufficiently watered. Plus, lettuce grows great in raised beds making it ideal for small spaces. Lettuces

are perfect for containers, which can be placed on decks, patios, balconies, and porches.

Lettuce prefers a location with 5 to 6 hours of sun, but can benefit from afternoon shade when temperatures soar. Soil should be loose, well-draining, and moist but not soggy. In weeks prior to planting, amend with plenty of compost for added fertility.

When to Plant Lettuce

- Soil temperatures between 45°F and 65°F are ideal. Cold-adapted varieties can survive much lower temperatures.
- Direct sowing is recommended. Plant seeds in the ground 2 to 4 weeks before your last spring frost date or as soon as the ground can be worked.
- In most regions, it's possible to plant another crop of lettuce in the fall or even early winter.

How to Plant Lettuce

- Since the seed is so small, a well-tilled seedbed is essential. Stones and large clods of dirt will inhibit germination.
- Plant seeds 1/8 to 1/4 of an inch deep. Lettuce seeds need light to germinate, so don't sow them too deep.
- Seed may be sown in single rows or broadcast for wide row planting (loose-leaf varieties are best for this). When broadcasting, thin 1- to 2-inch tall seedlings for the proper spacing.
- Spacing between plants depends on the variety:
 - *Loose-leaf lettuce*: Plant or thin to 4 inches apart.
 - *Romaine (cos) and butterhead (loose-head, Bibb, Boston) lettuce*: Plant or thin to 8 inches apart.
 - *Crisphead (iceberg) lettuce*: Plant or thin to 16 inches apart.
- Set rows of lettuce 12 to 15 inches apart
- Sow additional seeds every 2 weeks for a continuous harvest.
- Water thoroughly with a mist nozzle at time of transplanting or seeding.
- Make sure the soil remains moist but not overly wet. It should drain well. Overwatering leads to disease or soft growth.
- Lettuce will tell you when it needs water. Just look at it. If the leaves are wilting, sprinkle them anytime, even in the heat of the day, to cool them off and slow down the transpiration rate.
- An organic mulch will help conserve moisture, suppress weeds, and keep soil temperatures cool throughout the warmer months.
- Weed by hand if necessary, but be careful of damaging your lettuce plants' shallow roots.

Bolting

- Bolting is a common problem that's caused by warm temperatures (over 70°F / 20°C) or changes in day length. When a lettuce plant bolts, it starts to produce a central stem and seed stalk, and leaves take on a bitter flavor.

- To delay bolting, cover plants with a shade cloth so that they get filtered light. Be sure to maintain watering throughout the warmest parts of the growing season, too.
- Planning your garden so that lettuce will be in the shade of taller plants, such as tomatoes or sweet corn, may reduce bolting in the heat of the summer.

Harvesting

Harvest lettuce in the morning when full-size but young and tender. Check your garden everyday for ready-to-harvest leaves; mature lettuce gets bitter and woody and will go bad quickly.

- Before maturity, you can harvest leaf lettuce by simply removing outer leaves so that the center leaves can continue to grow.
- Harvest butterhead, romaine, and loose-leaf types by removing the outer leaves, digging up the whole plant, or cutting the plant about an inch above the soil surface. A second harvest is often possible when using the first or third methods.
- Crisphead lettuce is picked when the center is firm.

How to Store Lettuce

- Store lettuce in a loose plastic bag in the refrigerator for up to 10 days.
- When ready to use, put the harvested lettuce in cold water for a few minutes. Then place in a salad spinner or towel. Spin the spinner to remove water from the lettuce.
- Lettuce leaves have wilted? Put the leaves in a bowl of cold water with ice cubes and soak for about 15 minutes.

Green Beans

Green beans are a staple of so many vegetable gardens because they are so easy to grow—even in limited space—and incredibly productive! Here’s how to plant, grow, and harvest green beans, including both the pole and bush types.

About Green Beans

All green beans (also called “string beans” or “snap beans”) are tender annuals. Though most green beans are indeed green, they also come in purple, red, yellow, and streaked varieties.

What’s the Difference Between Bush Beans and Pole Beans?

The main difference between the many types of green beans is whether their growing style is classified as “bush” or “pole.”

- **Bush beans** grow compactly (reaching about two-feet tall) and do not require extra support from a structure like a trellis.
- **Pole beans** grow as climbing vines that may reach 10 to 15 feet tall and require a trellis or staking.

There are upsides and downsides to both types, of course:

- Bush beans generally require less maintenance due to their size, but pole beans typically yield more beans for longer and are mostly disease-resistant.

- Bush beans produce in about 50 to 55 days; pole beans will take 55 to 65 days.
- Bush beans often come in all at once, so stagger your plantings every two weeks to get a continuous harvest. Pole beans need their vines to grow and will produce for a month or two if you keep harvesting.

Beans grow best in well-draining soil with normal fertility and an acidic to neutral pH (6.0–7.0). They don't typically need supplemental fertilizer because they fix their own nitrogen in the soil. Beans don't like having their roots disturbed, so set up any supports for pole beans prior to planting.

When to Plant Beans

- Beans grow best when direct-seeded outdoors. Sow any time after the last spring frost date, when soil have warmed to at least 48°F (9°C). Don't plant too early, as cold, moist soil will delay germination and could cause the seeds to rot.
- Do not start green bean seeds indoors. Due to their fragile roots, they may not survive transplanting. Plus, they're such fast growers that there's no real advantage to starting them early indoors.

How to Plant Beans

- Sow **bush beans** 1 inch deep and 2 inches apart in rows 18 inches apart.
- Sow **pole beans** 1 inch deep, placing them around supports.
- For pole beans, set up trellises, stakes, or other supports prior to planting so that the plants' fragile roots are not disturbed.
 - One option is to create a tepee: Tie three or four (or more) 7-foot-long bamboo poles or long, straight branches together at the top and splay the legs in a circle. Then plant three or four seeds around each pole. As vines appear, train them to wind up the poles. For more stability, wrap string/wire around the poles about halfway up, encircling the tepee; this gives the vines something to grab.
 - Another easy support for them is a "cattle panel"—a portable section of wire fence—16 feet long and 5 feet tall. The beans will climb with ease and you won't have to get into contorted positions to pick them.
- For a continued harvest that lasts all summer, sow seeds every 2 weeks. If you're going to be away and unable to harvest, skip a planting. Beans do not wait for anyone!
- Practice crop rotation (planting crops in different areas each year) to avoid the build up of pests and diseases in one spot.

How to Grow Beans From Planting to Harvest

- Mulch soil around bean plants to retain moisture; make sure that it is well-drained. Beans have shallow roots, so mulch keeps them cool.
- Water regularly, about 2 inches per square foot per week. If you do not keep beans well watered, they will stop flowering. Water on sunny days so that foliage will not remain soaked, which could encourage disease.
- If necessary, begin fertilizing after heavy bloom and the set of pods. Avoid using high-nitrogen fertilizer or you will get lush foliage and few beans. A

- side dressing of compost or aged manure halfway through the growing season is a good alternative to liquid fertilizer.
- Weed diligently but carefully to avoid disturbing the beans' roots.
 - Pinch off the tops of pole bean vines when they reach the top of the support. This will force them to put energy into producing more pods instead.
 - In high heat, use row covers over young plants; hot weather can cause blossoms to drop from plants, reducing the harvest.

Harvesting Beans

- Harvest beans in the morning when their sugar level is highest.
- Pick green beans every day; the more you pick, the more beans grow.
- Green beans are picked young and tender before the seeds inside have fully developed.
- Look for firm, sizable pods that are firm and can be snapped—generally as thick as a pencil.
- Snap or cut the beans off the plant, being careful not to tear the plant. Fresh beans should snap easily when broken.
- Once you see the seeds inside bulging, green beans are past their peak and will taste tough.

How to Store Green Beans

- Store beans in an airtight container in the refrigerator for up to 4 days.
- Beans will toughen over time even when stored properly.
- Alternatively, blanch and freeze immediately after harvesting.
- Beans can also be canned or pickled.

Radishes

Radishes are a hardy, easy-to-grow root vegetable that can be planted multiple times in a growing season. They are grown for their root and their edible leaves. Plus, radishes can be harvested as soon as 3 weeks after planting! Here's our full guide on how to grow radishes in your garden.

About Radishes

Radish seeds can be planted in both the spring and the fall, but growing should be suspended in the height of summer, when temperatures are typically too hot. Hot temperatures may cause radishes to bolt, making them essentially useless.

Otherwise, radishes are one of the easiest vegetables to grow.

Plant radishes in a sunny spot. If radishes are planted in too much shade, or even where neighboring vegetable plants shade them, they will put all their energy into producing larger leaves.

- Till your garden bed to remove any rocks or dirt clods before planting.
- Like carrots, radish plants are primarily grown for their roots. Though the soil needs to be rich in organic matter, it should not be compacted. If your soil is more clay-like, mix in some compost to loosen it and improve drainage.

- Practice 3-year crop rotation. In other words, only plant radishes in the same spot every third year. This will help prevent diseases from affecting your crop.

When to Plant Radishes

- For a spring planting, sow seeds 4 to 6 weeks before the average date of your last spring frost.
- Fall planting is also possible with radishes. You can plant radishes later than any other root crop in late summer or early fall and still get a harvest. Sow seeds 4 to 6 weeks before the first fall frost.

How to Plant Radishes

- Radishes do best in soil rich in organic matter. Incorporate a few inches of aged compost or apply all-purpose fertilizer (see packaging for amount) into the planting site as soon as the soil is workable.
- Radish seeds have a fairly long shelf life. Don't be afraid to plant radish seeds that are up to 5 years old. All may not germinate, but you'll have plenty that will.
- It's best to sow radish seeds directly in the garden so as not to disturb their roots. Directly sow seeds outdoors ½ to 1 inch deep and 1 inch apart in rows 12 inches apart.
- Sow another round of seeds every 10 days or so while weather is still cool for a continuous harvest of radishes in the late spring and early summer.

Crowded plants do not grow well. Thin radishes to about 2 inches apart when the plants are a week old by snipping the greens at the soil line.

If thinning have been carefully pulled with roots, leaves, and stems intact, replant them. Transplants might be a bit stressed, but they should recover.

- Weed regularly to reduce competition to radishes.
- Consistent, even moisture is key. Keep soil evenly moist but not waterlogged. A drip irrigation system is a great way to achieve this.
- Putting a thin layer of mulch around the radishes can help retain moisture in dry conditions. Radishes will be ready to harvest quite rapidly, as soon as 3 weeks after planting for some varieties. For most varieties, harvest when roots are approximately 1 inch in diameter at the soil surface. Pull one out and test it before harvesting the rest. Do not leave radishes in the ground long after their mature stage. Their condition will deteriorate quickly.

Harvesting

Radishes will be ready to harvest quite rapidly, as soon as 3 weeks after planting for some varieties. For most varieties, harvest when roots are approximately 1 inch in diameter at the soil surface. Pull one out and test it before harvesting the rest. Do not leave radishes in the ground long after their mature stage. Their condition will deteriorate quickly.

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How to Store Radishes

- Cut off the tops and the thin root tail, wash the radishes, and dry them thoroughly. Store in plastic bags in the refrigerator.
- Radish greens can be stored separately for up to 3 days.

Tomatoes

Let's hear it for America's favorite vegetable. Find out everything, from when to start tomatoes, how long it takes a tomato to bear fruit, and different varieties of tomatoes.

Tomato plants are tender warm-season crops that love the sun and cannot bear frost. It's important not to put plants in the ground too early. In most regions, the soil is not warm enough to plant tomatoes outdoors until late spring and early summer.

Tomatoes take 60 days to more than 100 days to harvest, depending on the variety (see more about varieties below). Due to their relatively long growing season requirements (and late planting date), most gardeners plant small "starter plants" or transplants instead of seeds after the weather has warmed up in spring. Many gardeners purchase their transplants at a garden center or nursery but you can certainly grow your own from seed indoors.

A few guidelines on buying transplants:

- Choose young tomato plants from a reputable nursery.
- Good starter plants are short and stocky with dark green color and straight, sturdy stems about the size of a pencil or thicker.
- They should not have yellowing leaves, spots, or stress damage, nor have flowers or fruits already in progress.

Select a site with full sun! In northern regions, 8 to 10 hours of direct sunlight are preferred. In southern regions, light afternoon shade (natural or applied, e.g., row covers) will help tomatoes to survive and thrive. Dig soil to about 1 foot deep and mix in aged manure and/or compost. Give it two weeks to break down before planting.

When to Plant Tomatoes

Tomatoes are long-season, heat-loving plants that won't tolerate frost, so wait until the weather has warmed up in the spring.

Hardening Off Tomatoes

- If you're buying or growing the start plants, you'll need to "harden off" the seedlings for a week before transplanting them in the ground. Set them outdoors in the shade for a few hours on the first day. Gradually increase this time each day to include some direct sunlight.

Transplanting Tomatoes

- Transplant your seedlings (or your nursery-grown plants) into the ground outdoors after all danger of frost has passed and the soil is at least 60°F.

- Place tomato stakes or cages in the soil at planting. Staking and caging keep developing fruit off the ground (to avoid disease and pests) and also help the plant to stay upright
- Optional: When you transplant tomatoes, add a handful of organic tomato fertilizer or bone meal (a good source of phosphorus) to the planting hole. Do NOT apply high nitrogen fertilizers such as those recommended for lawns, as this will promote luxurious foliage but can delay flowering and fruiting.
- When planting seedlings, pinch off a few of the lower leaves. Here are two ways to set seedlings in the soil:
 1. Place each root ball deep enough so that the bottom leaves are just above the surface of the soil. Roots will grow all along the plant's stem underground. Plant seedlings 2 to 3 feet apart. Crowded plants will not get sufficient sun and the fruit may not ripen.
 2. Alternatively, lay long, leggy transplants on their sides in trenches 3 to 4 inches deep. Bury the stems up to the first set of true leaves. Roots will develop along the buried stem. If you plant this way, consider setting four tomato plants in compass-point positions (north, south, east, west). This formation enables you to fertilize and water the plants in the middle.
- Remember to allow enough space for the plants to spread out.
- Water well to reduce shock to the roots.

Growing Tomatoes in Containers

- Use a large pot or container (at least 20 inches in diameter) with drainage holes in the bottom.
- Use loose, well-draining soil (e.g., at least 12 inches of a good "potting mix" with added organic material).
- A tray of some sort should be placed under the pot to catch any excess water that drains out the bottom.
- Choose determinate types, such as bush or dwarf varieties. Many cherry tomatoes grow well in pots. Taller varieties may need to be staked.
- Plant one tomato plant per pot and give each at least 6 hours of sun per day.
- Keep soil moist. Containers will dry out more quickly than garden soil, so check daily and provide extra water during heat waves.

Watering

- Water in the early morning so that plants have sufficient moisture to make it through a hot day.
- Water generously the first few days that the tomato seedlings or transplants are in the ground.
- Then water with about 2 inches (about 1.2 gallons) per square foot per week during the growing season. Deep watering encourages a strong root system.
- Avoid overhead watering and afternoon watering. Water at the base/soil level of a plant to avoid splashing water on the leaves (which invites disease).

- Mulch 5 weeks after transplanting to retain moisture, keep soil from splashing the lower leaves, and control weeds. Apply 2 to 4 inches of organic mulch such as straw, hay, or bark chips.
- To help tomatoes through periods of drought, find some flat rocks and place one next to each plant. The rocks prevent water from evaporating from the soil.

Fertilizing

- You should have already worked compost into the soil before planting, and added some bonemeal to the planting hole when transplanting.
- Side-dress plants, applying liquid seaweed or fish emulsion or an organic fertilizer every 2 weeks, starting when tomatoes are about 1 inch in diameter (some folks say golf ball-size).
- Continue fertilizing tomatoes about every 3 to 4 weeks until frost.
- Note: Avoid fast-release fertilizers and avoid high-nitrogen fertilizers. As stated, too much nitrogen will result in lush foliage but few flowers and little or no fruit.

Pruning, pinching, staking

- If growing vining tomatoes, pinch off suckers (new, tiny stems and leaves between branches and the main stem). This aids air circulation and allows more sunlight into the middle of the plant.
- Gently tie the stems to stakes with rags, nylon stockings, twine, or soft string.
- As a plant grows, trim the lower leaves from the bottom 12 inches of the stem.

Two Types of Tomatoes

- **Determinate tomatoes**, better known as bush varieties grow 2 to 3 feet tall. These varieties tend to provide numerous ripe tomatoes at one time. They do not put on much leaf growth after setting fruit, and tend to fruit for a (relatively) brief period of time. They are generally productive earlier than the vining varieties, and not in the latter part of the growing season. Determinate tomatoes do not require staking or caging. These plants are idea for containers and small spaces. Most paste tomatoes are determinate, which works well for making sauce and canning. Because they produce at the same time, determinate tomatoes are a good selection for canning.
- **Indeterminate tomatoes**, better known as vining varieties produce the largest types of mid- to late-season slicing tomatoes all summer and until the first frost. Because indeterminates experience more leaf growth, their production tends to be spread more evenly throughout the season. Indeterminate tomatoes need staking. They are ideal in large gardeners. Most beefsteak and cherry tomatoes are indeterminate.

Tomatoes come in a wide range of flavors, as well as colors and sizes, from tiny grape-sized to giant beefsteaks. The choice also depends on how you will use this versatile fruit in the kitchen. For example, Roma tomatoes are not usually eaten fresh out of hand, but are perfect for sauces and ketchups.

Harvesting

Tomatoes

Leave garden tomatoes on the vine as long as possible.

- Harvest tomatoes when they are firm and very red, regardless of size, with perhaps some yellow remaining around the stem. Harvest tomatoes of other colors (orange, yellow, purple, or another rainbow shade) when they turn the correct color.
- If temperatures start to drop and your tomatoes aren't ripening, use one of these methods:
 1. Pull up the entire plant, brush off dirt, remove foliage, and hang the plant upside down in a basement or garage.
 2. Place mature, pale green tomatoes stem up, in a paper bag and loosely seal it. Or wrap them in newspaper and place in a cardboard box. Store in a cool (55°F to 70°F), dark place. Cooler temperatures slow ripening; warmth speeds it. Check weekly and remove soft, spotted, diseased, or ripe fruit.
- Never place tomatoes on a sunny windowsill to ripen. They may rot before they are ripe!

How to Store Tomatoes

- Never refrigerate fresh garden tomatoes. Doing so spoils the flavor and texture that give them that garden tomato taste.
- To freeze, core fresh and unblemished tomatoes and place them whole in freezer bags or containers. Seal, label, and freeze. The skins will slip off when they thaw.

Zucchini

Zucchini and other summer squash are prolific producers. Each plant will produce several squash during peak season! But that doesn't mean that they're trouble-free. In our growing guide, we'll cover planting through harvesting and also share tips and tricks to sidestep common problems.

About Zucchini

Note that squash is generally divided into two categories: summer squash (harvest in summer) and winter squash (harvested in autumn). The skin of summer squash is edible, unlike the skin of winter squash. Most summer squash now come in bush varieties, which take up less space, whereas winter squash are vining plants that need more space.

This guide focuses on summer squash. Summer squash varieties include **zucchini**, **yellow squash** (straightneck squash), and **crookneck squash**. Note: All types of summer squash require very similar care, so even though we mainly refer to zucchini on this page, consider it to be applicable to whatever summer squash variety you're growing!

Zucchini is a vigorous grower. While each plant will produce several squash during peak season, you'll typically find that one or two zucchini plants will produce a "bumper" (unusually large) crop, leaving you to give the squash away to neighbors or bake lots of zucchini bread!

Pick a location with full sun, shelter from wind for good pollination, and soil that is moist (not soggy) and well draining. Squash also produces well if well fed. Mix aged manure and/or compost into the soil before planting. Learn more about [preparing soil for planting](#).

When to Plant Zucchini

- Direct-sow seeds (i.e., directly into the ground) when all danger of frost has passed and the air and soil are at least 60°F.
- Warm the soil with black plastic mulch once the soil has been prepared in early spring.
- Do not rush to plant zucchini. Consider planting a few seeds in midsummer to avoid problems from squash vine borers and other early-season pests and diseases.

How to Plant Zucchini

- Direct sow seeds in level ground 1 inch deep and 2 to 3 inches apart.
- Or, sow 3 or 4 seeds close together in small mounds (or hills; the soil is warmer off the ground) in rows 3 to 6 feet apart.
- If necessary, use row covers, or plastic milk jugs, or cold frame protection in cold climates for the first few weeks of spring.
- Thoroughly water after planting.
- Adding a layer on top of mulch (such as garden compost) to lock in soil moisture.
- Mulch to discourage weeds, retain moisture, and protect shallow roots.
- Zucchini thrive in moist soil. Water thoroughly, frequently, and consistently, with at least 1 inch per week. Water diligently when fruit form and throughout their growth cycle. The soil needs to be moist 4 inches down, so long soakings are best. Misshapen squash result from inadequate water or fertilization.
- Remove any weeds that manage to poke through. To keep plants tidy, cut off any dead or shriveling weeds. Top up mulches, using organic matter such as garden compost, to help roots stay cool and moist.
- When the first blooms appear, side dress with a balanced fertilizer.
- Poor pollination by bees can be an issue. Squash flowers will not bear fruit or bear small fruit if not pollinated. Most squash plants produce both male (these appear first, on long thin stalks) and female flowers (these have an immature fruit behind them). To fruit, pollen from the male flowers must be transferred to the female flowers by bees—or by the gardener. Pollinate the female flowers manually with a cotton swab or add plants that attract bees near the squash.

HARVESTING

Harvest summer squash when tender and a bit immature (6 to 8 inches long) for more flavor. Believe us, oversize squash has very little taste. Many people wait too long to harvest. If you have ever had a negative experience with zucchini before, it's probably because they were left to become bruisers.

- Most varieties average 60 days to maturity, and are ready as soon as a week after flowering. (Check the seed packet for more exact information.)

- Cut (do not break) fruit off the vine with a sharp knife or you risk damaging the soft stem of the plant. Leave at least 1 inch of stem on the fruit.
- To slow production, harvest fruit when small and/or remove male flowers.
- If the harvest is interrupted (say, by your vacation), remove large squash on your return to reduce demands on the plants for moisture and nutrients.
- Complete the harvest before the first fall frost; summer squash is highly susceptible to frost and heat damage.

How to Store Zucchini

- Fresh summer squash has a relatively short shelf life. Store unwashed zucchini in a plastic or paper bag with one end open to encourage air circulation, and pop them in the refrigerator crisper drawer. They'll keep for 10 days.
- Too much zucchini? Freeze it! It will keep for 3 months.

Peppers

About Bell Peppers

Sweet bell peppers are a tender, warm-season crop with a long growing season (60 to 90 days).

Many gardeners need to start peppers indoors to give them a head start! However, if you don't have the means to sow peppers or have simply run out of time, remember you can find a fantastic range of ready-to-go seedlings and young plants online, while some garden centers and nurseries stock plants on the cusp of fruiting.

Peppers resist most garden pests and offer something for everyone: spicy, sweet, or hot; and a variety of colors, shapes, and sizes. On this page, we focus on growing **sweet bell peppers but much of the advice for growing peppers is the same.**

Common Bell Pepper Questions

Do different-colored peppers come from different plants?

Surprisingly enough, the green and red bell peppers that we commonly see in supermarkets are actually the same pepper; the red bell peppers have just been allowed to mature on the plant longer, which changes their color and lets them develop a higher Vitamin C content. More mature peppers also tend to be sweeter than their greener counterparts.

However, there are quite a few varieties of bell peppers out there, including purple, yellow, orange, white, and brown ones.

When to Plant Peppers

- If you're sowing peppers indoors, start them off early in spring to give them more time to crop throughout the summer! Start seeds indoors 8 to 10 weeks before your last spring frost date. Germination is quickest at 77° to 90° Fahrenheit. If you're planning to plant peppers outside, this should be done 2 to 3 weeks after the threat of frost has passed in the spring.

- To achieve these sorts of temperatures, you'll need a heated propagator or heat mat. You can start seeds at lower room temperatures, but expect germination to be slower and potentially erratic. Ideal conditions should see seedlings appear within about two weeks, but some varieties take as long as five, so don't give up on them too soon!
- If growing from nursery-bought transplants, plant them outdoors 2 to 3 weeks after the threat of frost has passed. Be sure to [harden young plants off](#) prior to planting outdoors, as peppers are very sensitive to cool temperatures.

Preparing the Outdoor Planting Site

- Pepper plants require full sun to produce the largest and healthiest fruit, so pick a site that won't get shaded out by trees or other garden plants.
- Soil should be well-draining and rich in organic matter. Peppers don't like to have "wet feet," so avoid planting them in locations that get too wet.
- A soil consistency somewhere between sandy and loamy will ensure that the soil drains well and warms quickly.
- Soil pH should be on the slightly acidic side—6.0 to 7.0, ideally.
- A week before transplanting peppers into the garden, introduce fertilizer or aged compost into your garden soil. Alternatively, mix in a slow-release fertilizer.
- Avoid planting peppers in places where you've recently grown other members of the nightshade family—such as tomatoes, potatoes, or eggplants—as this can expose peppers to disease.

Planting Peppers Outdoors

- Begin to harden off plants about 10 days before transplanting outdoors, which should be done
- The soil temperature should be at least 60°F (16°C) at the time of planting (though warmer is better), as peppers are very sensitive to cool temperatures. Speed up the warming of the soil by covering it with black plastic or a dark mulch about a week before you intend to plant.
- When you transplant seedlings outdoors, space them 18 to 24 inches apart.
- Plant the transplants no deeper than they were already planted in their pots; otherwise, the stems may become more susceptible to rot.

Watering Peppers

- Peppers should never be allowed to struggle and soil moisture is especially important in this regard. Peppers like a good dousing but should be left to almost dry out between waterings – they need that period of relative dry. Once a week is typical. If the leaves have gone a bit limp, you've probably left it a little too long, but a thorough watering should sort things out.
- If you're growing in pots you can gauge whether the potting mix is dry enough by lifting the container to check its weight – it should be noticeably lighter, by pushing a finger into the soil to feel for moisture about an inch down.

- If you live in a warm or desert climate, or are simply experiencing a hot, dry summer, watering everyday may be necessary. Peppers are susceptible to blossom-end rot if watering is not adequate.

Fertilizing Peppers

- Peppers will need regular feeding using a liquid feed that's high in potassium to promote flower production and fruit set – a tomato fertilizer works well. A liquid seaweed with a good range of trace minerals works well, too. A lack of these minerals, together with over watering, is a common cause of yellowing leaves.
- After the first fruit set, fertilize with a low-nitrogen fertilizer. (Too much nitrogen can cause the plant to produce foliage instead of flowers and fruit!)

More Plant Care Tips

- Weed carefully around plants to avoid disturbing roots.
- If necessary, support plants with cages or stakes to prevent bending. Try commercially available cone-shaped wire tomato cages. They may not be ideal for tomatoes, but they are just the thing for peppers. Or, build your own garden supports.
- In cooler, temperate climates or it gets windy where you live, consider growing your peppers under some form of protection. Peppers love this extra warmth. However, if it gets very hot, this can cause flowers to abort and drop, so move plants back outside when temperatures soar.

How to Harvest Peppers

- Once the plants begin producing fruits, pick them promptly, the moment they have reached their full size and color. Regular picking encourages plants to produce more flowers and, of course, more fruits.
- That said, the longer bell peppers stay on the plant, the more sweet they become and the greater their vitamin C content.
- Use a sharp knife or scissors to cut peppers clean off the plant.

How to Store Peppers

- Peppers can be refrigerated in plastic bags for up to 10 days after harvesting.
- Gluts of bell peppers can be dried whole in a dehydrator or any warm place with good airflow. If you just have a conventional, here are directions on how to dry peppers for storage:
 - Wash, core, and seed the peppers. Cut into one-half-inch strips. Steam for about ten minutes, then spread on a baking sheet. Dry in the oven at 140°F (or the lowest possible temperature) until brittle, stirring occasionally and switching tray positions.
 - When the peppers are cool, put them in bags or storage containers or airtight jars. Or, chop peppers up for packing into ice-cube trays. Freeze them then pop them out into freezer bags ready for dropping into recipes as needed.

Beets

A staple in our gardens, beets grow easily and you won't have to wait long to harvest their tasty roots. You can eat their green tops, too, so they're a dual-purpose crop! Learn all you need to know about growing beets—from planting to harvest.

About Beets—or “beet roots”—are a colorful, cool-season crop that is easy to grow from seed in well-prepared soil and grows quickly in full sun.

They are a great choice for northern gardeners because they can survive frost and near-freezing temperatures. This also makes them great as a fall crop.

If you are a beginner, look for bolt-resistant varieties, which have less of a chance of bolting (maturing too quickly) in warm weather. There are many different varieties of beets, showcasing deep red, yellow, white, or striped roots of different shapes.

Beet roots can be harvested from the time they're about the size of a golf ball to the size of a tennis ball; larger roots may be tough and woody. Plus, beet greens have a delicious and distinctive flavor and hold even more nutrition than the roots!

When to Plant Beets

- Start your first round of beets in early spring, as soon as the soil is workable. Make successive plantings every 2 to 3 weeks until mid-summer.
- Successive plantings are possible through summer as long as daytime temperatures don't exceed 75°F (24°C).
- In soil that's at least 50°F (10°C), germination takes place in 5 to 8 days. In soil colder than that, germination may take 2 to 3 weeks.
- For a fall harvest, sow beet seeds from mid-summer through early fall, starting about 4 to 6 weeks before your [first fall frost](#).
- Winter crops are a definite possibility in Zone 9 and warmer. Plant beets in early to late fall for a winter harvest.

Choosing and Preparing a Planting Site

- Plant beets in full sun. They should ideally receive at least 6 hours of sunlight per day.
- Avoid planting beets where Swiss chard or spinach has recently been grown, as they are cousins of beets and are susceptible to similar pests and diseases.
- Beets prefer well-prepared, fertile soil, but will also tolerate average to low soil fertility.
- To allow the round beet roots to develop properly, soil should be free of rocks and other obstacles.
- Soil pH between 6.0 and 7.0 is best and slightly alkaline (7.0+) soils can be tolerated. Beets do not tolerate acidic soils (pH below 6.0).
- Poor soil can be amended with a balanced (10-10-10) fertilizer prior to planting. Learn more about soil amendments and preparing soil for planting.

How to Plant Beets

- We prefer to sow beets directly in the garden so that we don't have to disturb their roots, though beets—unlike many root crops—do generally tolerate being transplanted while still young. However, since they are cold tolerant, beets typically have no trouble being started outdoors.
- Sow seeds ½-inch deep and 1 to 2 inches apart in rows that are about 1 foot apart. After sowing, cover the seeds with a thin layer of soil.
- Each wrinkled beet “seed” is actually a cluster of 2 to 4 seeds, so you will need to thin the young plants to 3 to 4 inches apart once the greens get to be about 4 inches tall. This allows their roots to grow to their proper size.
- Make sure soil remains moist for optimal germination. Soak seeds for 24 hours prior to planting to speed up germination.

How to Grow Beets

- Mulch and then water regularly with about 1 inch of water per square foot per week. Beets need to maintain plenty of moisture in order to grow well.
- Weed as needed, but be gentle around young plants; beets have shallow roots that are easily disturbed.
- Consider covering beets with a row cover to prevent pests like leaf miners from attacking the plants' leaves.
- Supplementing with extra fertilizer is usually not necessary. If you do fertilize, go easy on nitrogen; excess will cause an abundance of greens but tiny bulbs beneath the soil.

How to Harvest Beets

- Days to maturity tend to be between 55 and 70 for most varieties. In other words, plan to harvest beets about 2 months after planting.
- Harvest roots when golf ball-size or larger; very large roots may be tough and woody.
- Loosen the soil around the beet and gently pull it from the earth.
- Harvest the beet greens at almost any time, beginning when thinning seedlings. Take one or two mature leaves per plant, until leaf blades are more than 6 inches tall and become tough. (Roots will not fully form without greens, so leaving some is necessary for proper development.)

How to Store Beets

- Fresh beets can be stored in the refrigerator for 5 to 7 days.
- For long-term root cellar storage, make sure you brush off any soil clinging to the roots, then bury them in layers (but not touching) surrounded by dry sand or sawdust.
- Store in a cool, dry place. An unheated closet might do, or put them in a cooler in your basement. Read more about a [new way to store beets](#) in the root cellar.
- Sprouting is a sign of poor storage and leads to decay.
- Beets can be frozen, canned, and [pickled](#), too!

Carrots

Everyone enjoys a sweet, crunchy carrot but many people find them a bit tricky to grow. But they're not if you know how! See our Carrot Guide for planting, growing, and harvesting carrots in the garden—and in containers! Plus, enjoy our new video to grow perfect carrots every time!

About Carrots

Carrots are a cool-season crop grown in spring. They are an excellent source of vitamin A and add color to a meal. They can be served cooked or raw.

This popular vegetable has a natural sweetness—especially the homegrown carrot because the sugar that makes a carrot sweet begins to be replaced by fiber as it ages in the grocery stores.

Plus, the home gardener has so many more varieties to grow from Belgium Whites to Purple Dragon to Parisian heirlooms that are round! (Not all carrots are the grocery store shape.) In fact, don't expect to get perfectly straight "grocery store" carrots. Your carrots will still taste better, whatever their shape!

Carrots have a reputation of being difficult to grow, especially in heavy, compacted soil. However, with a little effort, you can indeed grow carrots. Learn more in our planting guide below.

Misshapen carrots can be caused by heavy, compact, overly-enriched soil.

Carrots prefer sunny locations (6 to 10 hours of sun). The soil itself should be free-draining; this is one of the few crops that actively benefits from sandier soils. You don't want your soil to be too rich either or the carrots can't reach down!

If your garden is made up of hard, clay soil, grow carrots in containers or raised beds at least 8 inches to 12 inches high. See our tips on container gardening below!

When to Plant Carrots

- Carrot seeds can be sown about 2 to 3 weeks before the last spring frost date. Find your local frost dates here. Ideally, you want the soil to have both dried out and warmed up a little after the winter.
 - Seeds germinate after the soil temperature is at least 40° and germinate best at 55-65°, not exceeding 75°F. High summer temperatures reduce growth, decrease quality, and cause bitter or off-flavors to develop.
- For a fall harvest, sow seeds in mid- to late summer—starting about 10 weeks before your first fall frost.

How to Plant Carrots

- Prepare the site by tilling to a depth of 10 inches. Make sure there are no rocks, stones, or even soil clumps. Amend soil with compost and 6 inches of sandy topsoil if your soil isn't loose and airy. We recommend double-digging to be certain.
- We recommend sowing seeds directly in the garden (or wherever you plan to grow them) rather than transplanting. Carrots do not like to have their roots disturbed.
- Sow 1/4 inch deep, 2 to 3 inches apart in rows 1 foot apart.

- Keep the soil moist with frequent shallow waterings. For small carrot seeds to germinate, the soil mustn't form a hard crust on top; cover with a layer of fine sand, vermiculite, or compost to prevent a crust from forming. (If you put your finger in the ground, it should be moist, but not wet, to the middle knuckle.)
- Carrots are sometimes slow to germinate. They require 14-21 days to emerge, so don't panic if your carrots don't appear right away!
- Planting radishes with carrots helps minimize the crusting problem and helps you keep track of where the carrot seeds were planted. Sow quick-germinating [radish](#) seeds between carrot rows. The radishes will grow quickly and by the time the carrots really start to grow, the radishes can be harvested.
- For a continued harvest, plant carrots every 4 weeks through mid-summer.

Carrots in Containers

Growing carrots in pots is a great way to customize the perfect growing medium and avoid pests like carrot fly. Pots need to be at least 10-12 inches deep and as wide as possible.

- A great low-fertility mix is one part sand, one part potting mix.
- Sow seeds very thinly over the top of a filled pot and then cover them over with just a touch more of the mix.
- Water well, label, and set into a sunny position.
- Keep everything moist as unlike those that are in the ground, these carrots will be entirely dependent on you for all their needs.
- Thin the seedlings to a couple of inches apart once they're up. Then harvest once they've reached finger size.

Check out this video to learn how to plant carrots in the ground and in containers!

How to Grow Carrots

- Gently mulch carrots to retain moisture, speed germination, and block the sun from hitting the roots directly.
- When seedlings are an inch tall with 3 to 4 true leaves, thin so that they stand 3 to 4 inches apart. Snip tops with scissors instead of pulling them out to prevent damage to the fragile roots of the remaining plants. Ω
- Ensure carrots receive 1 inch of water per week either through rain or watering; do not overwater carrots.
- Weed diligently as carrots do not like struggling against weeds, but be careful not to disturb the young carrots' roots while doing so.
- Fertilize 5 to 6 weeks after sowing. (We recommend a low-nitrogen fertilizer as excess nitrogen in the soil promotes top, or foliage, growth—not roots.)

How and When to Harvest Carrots

How do you know when your carrots are ready? Have a little root around and check the approximate width of the roots by looking at the neck of the root. The first roots should be ready as soon as two months from sowing.

- Generally, the smaller the carrot, the better the taste. Carrots should be about as wide as your thumb or at least ½ of an inch in diameter.
- Younger and shallower roots should come away easily enough, simply by gripping them firmly at the base of the foliage. It often helps to push down on the root first, and then give it a twist as you gently pull upwards.
- Larger, longer roots – particularly those of maincrop carrots that are sown for winter eating – may need to be eased up with the help of a fork.
- Harvest in stages – or as roots reach full size. In this way you’ll stagger your harvest over many weeks.
- If you’re growing carrots in the spring and early summer, harvest before daily temperatures get too hot, as the heat can cause carrot roots to grow fibrous.
- If you are harvesting in the fall, carrots taste much better after one or more frosts. (A frost encourages the plant to start storing energy—sugars—in its root for later use.) Following the first hard frost in the fall, cover carrot tops with an 18-inch layer of shredded leaves to preserve them for harvesting later.
- **Note:** Carrots are biennial. If you fail to harvest and leave the carrots in the ground, the tops will flower and produce seeds in the next year.

Scrub off the dirt and remove the tops before storing carrots!

How Do You Store Fresh Carrots?

- To store freshly-harvested carrots, twist or cut off all but 1/2 inch of the tops, scrub off any dirt under cold running water, and air-dry. Seal in airtight plastic bags, and refrigerate. If you simply put fresh carrots in the refrigerator, they’ll go limp in a few hours.
- You may leave mature carrots in the soil for temporary storage if the ground will not freeze and pests aren’t a problem.
- Carrots can also be stored in tubs of moist sand or dry sawdust in a cool, dry area.

Spinach

Spinach, a super-cold-hardy leafy green, is a popular crop that can be planted in very early spring, as well as in fall and even winter in some areas. Learn more about planting and growing nutritious spinach in your home garden.

About Spinach

Spinach has similar cool-season growing conditions and requirements as [lettuce](#), but it is more versatile in both its nutrition and its ability to be eaten raw or cooked. It is higher in iron, calcium, and vitamins than most cultivated greens, and one of the best sources of vitamins A, B, and C.

Spinach tolerates full sun to light shade; prepare soil about a week before planting by mixing in compost. Alternatively, prepare the soil in late summer or early fall, when spinach can also be sown where winters are mild.

When to Plant Spinach

- Spinach requires 6 weeks of cool weather from seeding to harvest, so sow seeds directly into the soil as soon as the ground warms to 40°F. (Cover the soil with black plastic to speed its warming.)
- Although seeds can be started indoors, it is not recommended, as seedlings are difficult to transplant.
- Gardeners in northern climates can harvest early-spring spinach if it's planted just before the cold weather arrives in fall. Protect the young plants with a [cold frame](#) or thick mulch through the winter, then remove the protection when soil temperature in your area reaches 40°F in spring. Remove the mulch to harvest some spinach then replace the mulch.
- To distract leaf miners, sow radish seeds in alternate rows. Leaf miner damage to radish tops does not affect their root growth.
- Common spinach cannot grow in midsummer. (For a summer harvest, try New Zealand Spinach or Malabar Spinach, two similar leafy greens that are more heat tolerant.)
- For a fall crop, re-sow in mid-August when the soil is no warmer than 70°F.

How to Plant Spinach

- Sow seeds 1/2 of an inch deep every 2 inches and cover with 1/2 inch of soil.
- Plant in rows 12 to 18 inches apart or sprinkle over a wide row or bed.
- Sow every couple of weeks during early spring for a continuous harvest.

Growing Spinach

- Water spinach to keep soil constantly moist.
- Use row covers to maintain cool soil and deter pests.
- When seedlings sprout to about 2 inches, thin them to 3-4 inches apart. You can eat the thinnings.
- Beyond thinning, no cultivation is necessary. Roots are shallow and easily damaged.
- Water regularly and mulch to retain moisture.
- When plants reach one-third of their growth, side-dress with a high-nitrogen fertilizer, as needed. Nutrient deficiencies may appear as yellow or pale leaves, stunted or distorted growth, a purpling or bronzing of leaves, leaves dropping early, or other symptoms.
- In early spring and late fall: Spinach can tolerate the cold; it can survive a frost and temps down to 15°F (-9°C). (See local frost dates) Young spinach is more tender; cover if cold temps are in the forecast.

Harvesting Spinach

- Harvest a few outer leaves from each plant (so that inner leaves can develop) when leaves reach desired size, or harvest the entire plant, cutting the stem at the base.
- Don't wait too long to harvest or wait for larger leaves. Bitterness will set in quickly after maturity. Be aware of day length and heat: Increasing daylight (about 14 hours or longer) and warmer seasonal temperatures

- can cause spinach to bolt (develop a large stalk with narrower leaves and buds/flowers/seeds), which turns leaf taste bitter.
- If spinach starts to bolt, pull the plant and use the leaves. Or try to slow the bolting: Pinch off the flower/seed heads, keep the soil moist, and provide shade.

How to Store Spinach

Fresh spinach leaves are good up to a week. Too much moisture hastens its demise. So store fresh spinach unwashed and don't wash until ready to use. Pat dry with a paper towel and put in a freezer bag with the towel to absorb moisture. Given its short shelf life, spinach is perfect for freezing. Wash, trim off ends and yellowing leaves, blanch, and pack into freezer bags. [See how to freeze spinach.](#)

Peas

The sweet taste of glorious garden-grown peas is nothing like what you find in grocery stores. They are nature's candy off the vine! Plant peas as soon as the ground can be worked, even if snow falls afterwards. See our tips on growing peas, from sowing to harvest!

About Peas

Peas are very easy to grow but their growing period is limited to cool weather. Plus, peas do not stay fresh long after harvest, so enjoy their taste as soon as you can! Did you know: St. Patrick's Day is the traditional day for planting peas? The key to growing peas is to plant them early enough in spring so they mature while the weather is still cool. This means planting in February, March, or April in most parts of the United States and Canada. However, they can also be grown as a fall or winter crop in warmer regions.

Three varieties of peas suit most garden and culinary needs:

- **Sweet peas**, aka garden peas or English peas (*Pisum sativum* ssp. *sativum*), have inedible pods from which the seeds (peas) are taken.
- **Snow peas** (*P. sativum* var. *macrocarpon*) produce edible, flat, stringless pods containing small peas.
- **Snap peas** (*P. sativum* var. *macrocarpon* ser. cv.) produce thick, edible pods containing large/full-size peas

In the fall prior to planting, turn over the pea bed, mix in aged manure and/or compost, and mulch well. Peas planted in cold (40°F) soil will germinate slowly. Peas planted in soil temperature that is at least 60°F (but not more than 85°F) will catch up.

When to Plant Peas

- Sow seeds 4 to 6 weeks before the [last spring frost date](#) when the soil is cool, or when it is at the desired temperature:.
- Where spring is long and wet, plant in [raised garden beds](#).
- Snow will not hurt emerging pea plants, but several days with temperatures in the teens might. Be prepared to plant again, if the first peas don't make it. Alternatively, try starting your peas in a [cold frame](#).
- A second round of peas can be planted in the late summer or early fall, approximately 6 to 8 weeks before your [first fall frost date](#).

- Here are some more tips on [when to start planting peas](#).

For tall and vining pea varieties, set up poles or a trellis at the time of planting. The young tendrils need to have something to climb on immediately after emerging from the soil.

How to Plant Peas

Select a sunny location and well-draining soil. Although peas can grow in part shade, they won't be as sweet or productive as those grown in full sun.

- To speed germination, soak seeds in water overnight before planting.
- Sow seeds 1 inch deep (slightly deeper if soil is dry) and about 2 inches apart. Don't thin.
- Plant rows 7 inches apart.
- Although peas do not like their roots disturbed, transplanting is possible. Start seeds in biodegradable pots and transplant the pot and all into the garden. The pot will disintegrate.
- Do NOT plant peas in the same place more than once in every four years. Rotate crops.
- As with other legumes, pea roots will fix nitrogen in the soil, making it available for other plants.
- In terms of fertilizer, peas need phosphorus and potassium, but excess nitrogen will encourage foliage growth instead of flowers or pods. Learn more about soil amendments.

Bush peas can reach 18 to 30 inches tall. Pole types can grow at least 4 to 6 feet tall. Both types benefit from support (especially bush peas above 2 feet and all pole peas). Thin tree branches or twiggy sticks (pea sticks), trellises, chicken wire, strings, or netting work well. Place into the ground near each plant before it germinates.

- Water peas sparsely with no more than 1 inch per week, unless plants are wilting. We don't want to encourage pea rot. But also do not let the plants dry out. If this happens, no pods will be produced.
- If seeds wash out of the soil, poke them back in.
- Gently remove intrusive weeds by hand. If necessary, hoe or cultivate, but do so very carefully to avoid disturbing peas' shallow, fragile roots.
- Pea leaves turn yellow for several reasons. Often, this is due to the stress of hot weather. Provide partial shade (e.g., row covers) during the hottest time of day and water properly.
- Fertilizing plants is not usually required if the plants are mulched deeply with grass clippings, shredded leaves, or another biodegradable material. Most varieties of peas are ready to harvest 60 to 70 days after planting. Peas mature quickly, so check daily once you see the flowers in bloom. Pick peas in the morning after the dew has dried. They are crispiest then. Use two hands when you pick peas to avoid damaging the plant. Hold the vine with one hand and pull pods off with the other. And pick regularly to encourage more pods to develop. Pick peas in the morning after the dew has dried. They are crispiest then.

Harvesting Peas

- Pick snow peas when the delicate pods begin to show immature seeds inside.
- Gather snap peas when the pods become plump, yet are still glossy and filled with sweet-tasting peas.
- Pick shell peas before the pods become waxy.
- Peas are at the peak of flavor immediately after harvest.
- Pea pods that have hardened or turned a dull color are over mature. Mature plants usually stop producing and die back in hot summer weather.
- If you missed your peas' peak period, you can still pick, dry, and shell them for use in winter soups.

How to Store Peas

- Store peas in the refrigerator for about 5 days. Place in paper bags, then wrap in plastic.
- Or, freeze peas. Shell sweet peas, blanch, immerse in cold water, drain, and pack in sealed containers.
- De-string/trim snow or snap peas and prepare as above.

Five tips for choosing vegetables:

1. **Choose what you (and your family) like to eat.** If no one likes brussels sprouts, don't bother planting them! But if your kids love green beans, put more effort towards growing a big crop of beans.
2. **Be realistic about how many vegetables your family will eat.** Be careful not to overplant, as you will only stretch yourself thin by trying to take care of tons of plants! (Of course, you could always give excess veggies away to friends, family, or the local soup kitchen.)
3. **Consider the availability of veggies at your grocery store.** Maybe you want to grow tomatillos, instead of cabbage or carrots, which are readily available. Also, certain veggies are so far superior when homegrown, it's almost a shame not to consider them (we're thinking of garden lettuce and tomatoes). Also, homegrown herbs are far less expensive than grocery store herbs.
4. **Be prepared to take care of your plants throughout the growing season.** Going on a summer vacation? Remember that tomatoes and zucchinis are growing strongest in the middle of summer. If you're gone part of the summer, you need someone to look after the crops or they will suffer. Or, you could just grow cool-season crops such as lettuce, kale, peas, and root veggies during the cooler months of late spring and early fall.
5. **Use high-quality seeds.** Seed packets are less expensive than individual plants, but if seeds don't germinate, your money—and time—are wasted. A few extra cents spent in spring for that year's seeds will pay off in higher yields at harvesttime.

Where and When to Plant

If you are simply growing two or three tomato plants, this process is easy. But if you plan to grow a full garden, you need to consider:

- Where will each plant go?
- When will each vegetable need to be planted?

Here are a few guidelines for arranging your vegetables:

1. Not all vegetables are planted at the same time. “Cool-season” vegetables such as lettuce and broccoli and peas grow in cooler weather of early spring (and fall). “Warm-season” such as tomatoes and peppers and cucumbers aren’t planted until the soil warms up in late spring and summer.
2. Plant tall veggies (such as pole beans on a trellis or sweet corn) on the north side of the garden so they don’t shade shorter plants. If you do get shade in a part of your garden, save that area for small, cool-season veggies. If shade is unavoidable in parts of your garden, save those areas for cool-season vegetables which appreciate shade as the weather heats up.
3. Most veggies are annuals (planted each year). If you’re planning on growing “perennial” crops such as asparagus, rhubarb, and some herbs, provide permanent locations or beds.
4. Consider that some crops mature quickly and have a very short harvest period (radishes, bush beans). Other plants, such as tomatoes, take longer to produce, but also produce for longer. These “days to maturity” are typically listed on the seed packet.
5. Stagger plantings. You don’t want to plant all your lettuce seeds at the same time, or all that lettuce will need to be harvested at around the same time! Stagger plantings by a few weeks to keep ‘em coming!

Start planting your garden

You might have seen a variety of ways to plant, including the traditional long, straight rows. Our advice is to plant your garden your way by considering how you access the garden. Traditional long-row gardening has the advantage of greater air circulation, ease of picking the vegetables like beans and peas and you can run a small rototiller down the rows to keep weeds in check. But the traditional long, straight rows may not be the best way to plant your garden. Many gardeners prefer to plant in blocks. With blocks, you want each to be no more than three to four feet across so that you can reach into the middle from the path.

That’s the key! Plant your garden knowing that you will never walk on the planted area. You plant each block with adequate space between each plant to allow it to grow to maturity without being crowded. The planting area is not compacted from walking on it, so the weeds pull easily. You will only fertilize and water the planting blocks, saving time and money. In other words, you plant much like you would a raised bed garden.

Another piece of advice: Read the back of your seed packet. It will tell you when to plant seeds, how deep the seeds should be planted and how long it will take for the seeds to germinate. Most seeds are planted after the last frost, but there are some that can tolerate a little cold like spinach and peas. Also, you may want to plant for

a fall crop as well as the early summer crop for plants that don't like the heat of summer. Plant a second fall crop of lettuce, spinach and broccoli.

Be gentle with your seedlings

Note: If you're raising seedlings or bought plant seeds, they will need to be "hardened off." This basically just means you want to get those little baby plants used to the outdoors when they've been grown in your home or in a greenhouse.

These plants need to tolerate the sun all day, which is much more powerful than a grow light. They also have to change over from a tender stem and leaves to a woodier stem that can withstand the wind and even a rainstorm. They have to tolerate temperature changes from the heat of the day to the cooler nights. Start by taking your seedlings outside about two weeks before you want them in the garden. Place them in a shady sheltered location and bring them in each night. Gradually increase the amount of exposure to the sun. Do not allow the seedlings to wilt from lack of water. Do not put them outside if the temperature drops. Nighttime temperatures should be 50 degrees or more before you transplant into the garden.

FERTILIZING

The three primary nutrients plants need are nitrogen (N), phosphorus (P), and potassium (K). These are available in chemical/synthetic (nonorganic) fertilizers. The numbers of each nutrient indicate the percentage of net weight contained. For example, a 100-pound bag of 10-10-10 contains ten pounds of each element.

Nitrogen promotes strong leaf and stem growth and dark green color, such as desired in broccoli, cabbage, lettuce, and herbs. Add aged manure to the soil and apply alfalfa meal or fish or blood meal to increase available nitrogen.

Phosphorus promotes root and plant growth, including setting blossoms and developing fruit, and seed formation; it's important for cucumbers, peppers, squash, and tomatoes—any edible that develops after a flower has been pollinated. Add (fast-acting) bonemeal or (slow-release) rock phosphate to increase phosphorus.

Potassium promotes plant root vigor and disease and stress resistance and enhances flavor; it's vital for carrots, radishes, turnips, and onions and garlic. Add green sand, wood ashes, gypsum, or kelp to increase potassium.

What to Know About pH

It's important that garden soil has the proper soil pH. A very high or very low soil pH may result in plant toxicity or nutrient deficiency. A pH value of 7 is neutral; microbial activity is greatest and plant roots absorb/access nutrients best when the pH is in the 5.5 to 7 range.

When to Fertilize

Woody plants and perennials absorb nutrients from the soil during the growing season; they require few nutrients while dormant. Therefore, apply fertilizer as soon as the plants begin breaking dormancy in the spring.

Follow instructions on the label as to how often to apply (this depends on the type of fertilizer used).

Stop applications after the first fall frost.

Food crops also benefit from an early-start fertilizing schedule. Some “feed” on fertilizers lightly, others are considered heavy feeders, and require more regular applications throughout the growing season.

Choosing Fertilizer: Granular Vs. Soluble

Granular fertilizers are solids that must be worked into the soil and given time (and water) before they dissolve and become available to plants.

Slow-release fertilizers are a subset of granular formulations. A portion of the fertilizer is not immediately available to the plant. Nutrients are metered out over several weeks. Therefore, they are applied less frequently.

Sometimes called “liquid feed,” soluble fertilizers are sold as either ready-to-use solutions or as packaged dry-milled materials that need to be dissolved in water. These tend to be quick-release fertilizers high in nitrogen that result in fast green growth.

How to Apply Granular Fertilizers

Apply granular fertilizer by broadcasting it either by hand or with a spreader. Using a hoe, spade fork, or rake work it into the top 4 to 6 inches of soil. You can also add small amounts to planting holes (be sure to mix it in with backfill soil) or to rows as you sow seeds or plant plugs. It’s a good idea to water after you have applied fertilizer to help it leach down toward the plants’ root zones.

During the growing season, add supplemental fertilizer to the top inch of soil in crop rows, perennial beds, and around the drip line of trees or shrubs. (Read the label to find out how often applications should be made.)

How to Apply Liquid Fertilizers

Fast-acting liquid fertilizers are typically applied biweekly during the growing season. They are best used for container plantings and annuals.

With flowering and fruiting plants, foliar sprays are most useful during critical periods, such as after transplanting or during fruit set, or periods of drought or extreme temperatures. For leaf crops, some suppliers recommend biweekly spraying.

Foliar Spraying

Plants can absorb liquid fertilizers through both their roots and through leaf pores. Foliar feeding can supply nutrients when they are lacking or unavailable in the soil, or when roots are stressed. It is especially effective for giving fast-growing plants like vegetables an extra boost during the growing season. Some foliar fertilizers, such as liquid seaweed (kelp), are rich in micronutrients and growth hormones. These foliar sprays improve nutrient uptake by plants. Compost tea and seaweed extract are two common examples of organic foliar fertilizers.

To apply, simply mix the foliar spray in the tank of a backpack sprayer or hand mister set to emit a fine spray, and spray all your plants at the same time. (Never use a sprayer that has been used to apply herbicides.)

Spray until the liquid drips off the leaves. Concentrate the spray on leaf undersides, where leaf pores are more likely to be open. You can also water in liquid fertilizers around the root zone. A drip irrigation system can carry liquid fertilizers to your plants.

Garden Tool Chart

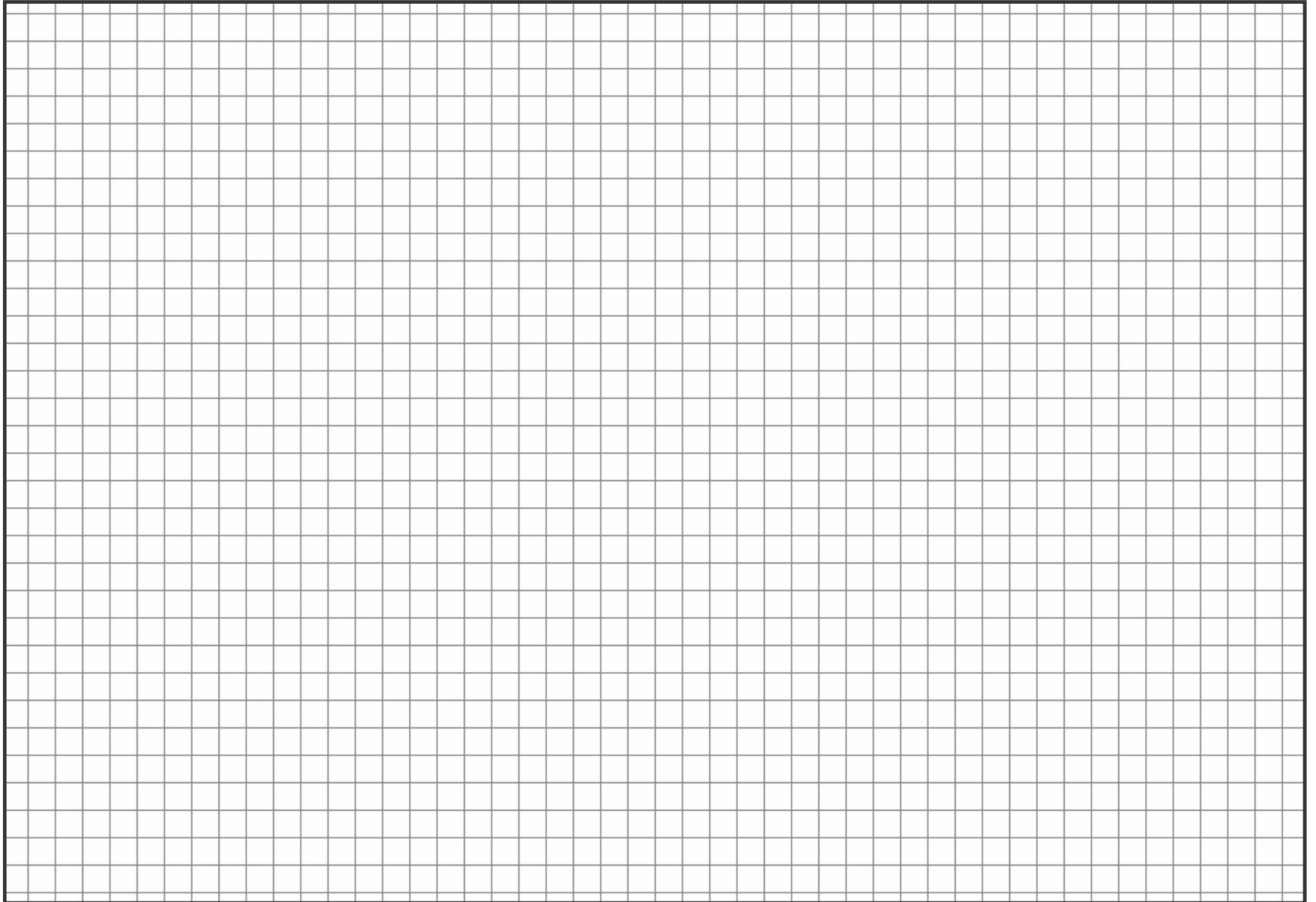
Big Tools	Hand Tools	Other Items
Long handle shovel	Hand trowel	Twine
Garden hoe	Cultivator	Stakes
Garden rake	Pruners	Plant markers & pens
Hula hoe	Tape measure	Rototiller
Warren hoe	Gloves	Garden cart
Digging fork	Knife	Mantis Tiller
Spade	Hammer	Wheelbarrow
Cultivator	Scissors	Garden bucket
Leaf rake	Weeder	Bucket Organizer
	Bulb planter	
	Dibble	
	Hose Nozzle	
	Coarse file	
	Pliers	

What to Plant and When

April	Early May	Mid to Late May	September
Lettuce	Radishes	Green Beans	Lettuce
Radishes	Carrots	Tomatoes	Radishes
Peas	Beets	Zucchini	Beets
Spinach		Peppers	Carrots
			Spinach
			Peas
Kale	Potatoes	Eggplant	Swiss Chard
Turnips	Cauliflower	Cucumbers	Kale
Onions	Swiss Chard	Celery	Turnips
Cabbage		Pumpkin	
Broccoli		Squash	
		Cantaloupe	
		Melon	

Vegetable	About	Seed or Transplant	When to Plant	How to Plant	Harvesting	Storing
Leaf Lettuce	Cool season, grows quickly, produce along time	Seed	Mid April and Mid September, sow every two weeks	1/8" deep, 12" rows, or broadcast, moist soil, thin to 4"	When full size, in the morning, outer leaves	Plastic bag in Ref for 10 days, put in cold water to use
Green Beans	Also purple, yellow, red, striped, pole or bush	Seed	After soil is warm, mid May and later, every two weeks	1" deep, 2" apart, 18" rows, around base of support, don't thin	In the morning, young and tender, no bulges, daily	Air tight container in Ref for 4 days, blanch & freeze
Radishes	Hardy and easy to grow, 3 weeks to harvest	Seed	Mid April and Mid September, sow every 10 days	1/2" deep, 1" apart, 12" rows, row or broadcast, thin to 2"	After about 3 weeks, 1" diameter root, before frost	Cut off tops & root tail, in Ref in plastic bag 3 days
Tomatoes	Tender plants, two types, #1 vegetable, need full sun	Transplant	Mid May to Mid June, warm soil, no frost expected	Harden transplants, plant deep, 3' apart, cage or stake, prune	Try to vine ripen, look for firm and very red	No Ref, cool place, good spacing, not on window sill
Zucchini	Includes all summer squash, vigorous growers, full sun	Seed	Mid May to Mid June, warm soil, no frost expected	3 to 4 seeds per hill, 3' to 6' apart, thin to 2 plants per hill	Check daily! 6" to 8" long, save on giant fruit	Short shelf live, in open paper bag 10 days in Ref
Peppers	Tender plants, sweet and hot, variety of colors	Transplant	Mid May to Mid June, warm soil, no frost expected	Harden transplants, 18" apart, 24' rows, same depth as pot	Green or red, use scissor or knife, bell sweeter if red	Plastic bag in Ref 10 days, can be dried or frozen unblanched
Beets	Easy and short season, greens and roots eaten	Seed	Mid April and Mid September, sow every two weeks	1/2" deep, 2" apart, 12" rows, row or broadcast, thin to 4"	Greens as they come, golf ball size or larger root	Fresh in Ref for 5 - 7 days, or can, freeze or pickle
Carrots	Cool season, variety of colors now, need well worked soil	Seed	Mid April and Mid September, sow another in 4 weeks	1/2" deep, 2" apart, 12" rows, row or broadcast, thin to 3"	At least 1/2" diameter, dig don't pull, before heat	Leave 1/2" top, sealed plastic bag in Ref for 2 weeks
Spinach	Cool season, eat raw or cooked, high in nutrients	Seed	Mid April and Mid September, sow every two weeks	1/2" deep, 2" apart, 12" rows, row or broadcast, thin to 4"	Outer leaves or entire plant, if bolts leaves will be bitter	Unwashed in Ref for a week, wash before using, also freeze
Peas	Sweet, Snow and Snap, cold tolerant, bush or pole	Seed	Early April and Mid September, will tolerate snow	1" deep, 2" apart, 12 rows, around base of support, don't thin	In the morning, plump and sweet tasting	Air tight container in Ref for 5 days, blanch & freeze

Garden Planner Grid

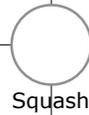


Summer Squash 10" hole
Plant seeds on ALSF

Tomatoes 4" hole
Plant seedlings 2 weeks after ALSF

Note: Follow instructions on seed packet for seed depth and spacing in row.

Cucumber 10" hole
Plant seeds on ALSF



Squash

Tomato

Tomato

Beans
4" x 5' rows
Plant seeds on ALSF



Beans

Swiss Chard
4" x 5' row
Plant seeds 0-2 weeks before ALSF



Beans

Lettuce
4" x 5' row
Plant seeds 2-4 weeks before ALSF



Chard



Lettuce

Radishes
4" x 5' row
Plant seeds 2-4 weeks before ALSF



Radish

Carrots
4" x 5' row
Plant seeds 0-2 weeks before ALSF



Carrots

Beets
4" x 5' row
Plant seeds 0-2 weeks before ALSF



Beets

Spinach
4" x 5' row
Plant seeds 2-4 weeks before ALSF



Spinach



Peas

Peas
4" x 5' rows
Plant seeds 2-4 weeks before ALSF



Peas

Onions
4" x 5' row
Plant sets 2-4 weeks before ALSF



Onions

Peppers Sweet or Chile
4" hole
Plant seedlings 2 weeks after ALSF



Pepper



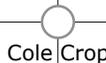
Cole Crop



Cole Crop



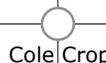
Pepper



Cole Crop



Pepper



Cole Crop



Pepper

Cole Crop Broccoli, Cabbage, or Cauliflower
4" hole
Plant seedlings 2 weeks before ALSF

Beans, Lettuce, Radishes, Beets, Spinach, Peas can have a second planting after the first planting has been harvested.

Use a piece or pieces of ground cover 10' by 15' and burn or cut holes in it for the plants. Cover can be turned over or swapped end for end so subsequent plantings are in a different locations.

TYPICAL COMMUNITY GARDEN PLOT 10 feet by 15 feet

ALSF - Average Last Spring Frost Date

Scale = 12" Squares



MASTER GARDENER
COLORADO STATE UNIVERSITY
EXTENSION

CMG GardenNotes #720

Vegetable Planting Guide

- Outline:
- Cool season vegetables, page 1
 - Hardy vegetables – Broccoli, cabbage, kohlrabi, onions, lettuce, peas, radish, spinach, turnips, page 1
 - Semi-hardy vegetables – Beets, carrots, cauliflower, parsley, parsnips, potatoes, and Swiss chard, page 1
 - Warm season vegetables, page 2
 - Tender vegetables – Beans, celery, corn, cucumbers, New Zealand spinach, and summer squash, page 2
 - Very tender vegetables – Lima beans, cantaloupe, eggplant, pepper, pumpkin, winter squash and pumpkin, tomato, and watermelon, page 2
 - Planting Guide Table – Vegetable planting guide, page 3
 - Average Frost Dates, page 4
-

Cool Season Vegetables

These vegetables prefer cool growing temperatures (60°F to 80°F) and lose quality in hot weather. They are often replanted mid-summer for fall harvest.

Hardy Vegetable

Crops: broccoli, cabbage, kohlrabi, onions, lettuce, peas, radish, spinach, turnips

Temperatures: Hardy vegetables grow with daytime temperatures as low as 40°F and may survive a frosty nip.

When to plant:

- Based on soil temperatures, refer to Table 1.
- Plant as soon as soil adequately dries in the spring.
- These crops may be planted as early as 2-4 weeks before the date of the average last spring frost.

Semi-Hardy Vegetables

Crops: beets, carrots, cauliflower, parsley, parsnips, potatoes, and Swiss chard

Temperatures: Semi-hardy vegetables grow with minimum daytime temperatures of 40°F to 50°F, but are less tolerant of a frosty night.

When to plant:

- Based on soil temperature, refer to Table 1.
- Plant as soon as soil adequately dries in the spring.
- These crops may be planted as early as 0-2 weeks before the date of the average last spring frost.

Warm Season Vegetables

Warm season vegetables prefer summer-like weather with temperatures between 70°F and 95°F. They are intolerant of frost and may be sensitive to cool spring winds.

Tender Vegetables

Crops: beans, celery, corn, cucumbers, New Zealand spinach, summer squash

Temperatures: Tender vegetables grow with a daytime temperature above 55°F, and are intolerant of frost.

When to plant:

- Based on soil temperature, refer to Table 1.
- Soil is adequately dry to work.
- These crops may be planted (from seed) around the date of the average last spring frost. Transplants of cucumbers and summer squash without frost protection should be delayed until frost potential is over.

Very Tender Vegetables

Crop: lima beans, cantaloupe, eggplant, pepper, pumpkin, winter squash and pumpkins, tomato, and watermelon

Temperatures: Very tender vegetables are not only intolerant of frost, but also cool spring winds. They need daytime temperatures above 60°F, and prefer temperatures of 70°F to 95°F. A week of daytime temperatures below 55°F, may stunt the crop.

When to plant:

- Based on soil temperature.
- Soil is adequately dry to work.
- These crops are typically planted two plus weeks after the average last spring frost date.
- Weather is becoming summer-like, (i.e., consistently above 55°F (daytime) and breezes should have lost any cool nip).

Table 1 – Vegetable Planting Guide

Vegetable	Germination Temperature ¹			Plant Spacing ²	Planting Depth	Days to Germination	Typical Days to Harvest	Age of Transplant (weeks)
	Min.	Optimum	Max.					
<u>Cool Season Crops³</u>								
Beets	40°	80°	90°	4-6"	¾-1"	7-10	60	
Broccoli ⁴	40°	80°	90°	18"	½"	3-10	65T ⁴	5-7
Cabbage ⁴	40°	80°	90°	18"	½"	3-10	85T ⁴	5-7
Carrots	40°	80°	90°	2-3"	¼"	10-17	70	
Cauliflower ⁴	40°	80°	90°	18"	½"	3-10	65T ⁴	5-7
Kohlrabi	40°	80°	90°	7-9"	½"	3-10	50	
Leeks	40°	80°	90°	4-6"	¼"	7-12	120	
Lettuce (leaf types)	35°	70°	70°	7-9"	¼"	4-10	60	
Onion, green	35°	80°	90°	2-3"	¼"	7-12	60	
Onions, dry (seed sets)	35°	80°	90°	4-6" 4-6"	¼" 1-2"	7-12	110	
Parsnips	35°	70°	90°	5-6"	½"	15-25	70	
Peas	40°	70°	80°	4-6" or 3"×8"	1"	6-15	65	
Potatoes	45°			12-15"	4-6"		125	
Radish	40°	80°	90°	2-3"	½"	3-10	30	
Spinach	40°	70°	70°	4-6"	½"	6-14	40	
Swiss Chard	40°	85°	95°	7-9"	1"	7-10	60	
Turnips	40°	80°	100°	4-6"	½"	3-10	50	
<u>Warm Season Crops</u>								
Beans, snap	55°	80°	90°	6" or 4" x 12"	1-1½"	6-14	60	
Cantaloupe ⁵	60°	90°	100°	36-48"	1-1½"	3-12	85	2-3 ⁵
Corn	50°	80°	100°	12" x 30" 9" x 36"	1-1½"	5-10	60-90	
Cucumbers	60°	90°	100°	6" trellised 24-36" untrellised	1"	6-10	55	2-3 ⁵
Eggplant	60°	80°	90°	18-24"	¼"	7-14	60T ⁶	6-9
Pepper	60°	80°	90°	15-18"	¼"	10-20	70T ⁶	6-8
Tomato	50°	80°	100°	trellised: 24" between plants	¼"	6-14	65T ⁶	5-7
Squash, Summer	60°	90°	100°	36-48"	1-1½"	3-12	50	2-3 ⁵
Squash, Winter	60°	90°	100°	36-48"	1-1½"	6-10	100	2-3 ⁵
Watermelons	60°	90°	110°	36-48"	1-1½"	3-12	85	2-3 ⁵

1 Germination temperature – Soil temperature is one of the best methods to determine spring planting time. Plant when soils reach minimum temperature measured at 8 a.m., 4 inches deep. Beans are an exception, being measured at 6 inches deep. Optimum temperatures listed in the table are useful for starting seeds indoors. Maximum temperatures are listed in regards to high soil temperatures that may interfere with seed germination in the summer.

2 Plant Spacing – Spacings given are equal-distance spacing for crops grown in block or close-row style beds. For example, beets, with a spacing of six inches are thinned to six inches between plants in all directions. In other words, beets are thinned to six inches between beets in the row and six inches between rows. The closer spacing listed should be used only on improved soils with 4-5% organic matter.

Close-row or block style planting works well for raised bed gardening, with blocks/beds 4 feet wide (any length desired) and 2-foot wide walkways between blocks/beds.

3. Cool Season Crops – Cool season crops prefer a cool soil. Lawn clipping and newspapers make an excellent mulch for these crops by cooling the soil, preventing weed germination, and conserving water. Apply fresh grass clippings only in thin layers (less than ½ inch) and allow it to dry between applications. Thick layers will

mat and smell. Do not use clipping from lawns treated with weed killers or other pesticides. Several layers of newspapers covered with grass clippings also work well between rows. Do not use glossy print materials.

4 Transplanted Cole Crops – Since cole crops (cabbage, cauliflower, broccoli, and Brussels sprouts) germinate better in warmer soil, they are typically started from transplants in the spring. Days to harvest are from transplants. In the warmer areas of Colorado, these crops produce the best quality when direct seeded mid-summer (early July for the Front Range area) for harvest during cooler fall weather. Before planting out, harden off seedlings.

5 Transplanting Vine Crops – Vine crop (cucumbers, squash, melons) roots are extremely intolerant of being disturbed, and perform best when grown by direct seeding rather than by transplants. With the use of black plastic to warm the soil, direct seeded crops germinate rapidly. If using transplants, select small, young plants, not more than 2-3 weeks from seeding.

6 Tomato family transplants – The tomato family is traditionally planted from transplants. In warmer areas of Colorado, they can also be direct seeded with minimal delay. Days to harvest are from transplants.

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