Irish Eyes, LLC

Complete Growing Guide

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Artichoke

This cool season vegetable yields flavorful edibles, as well as attractive purple-blue flowers that make beautiful dried floral arrangements. Globe artichokes are native to the Mediterranean region, but have been grown in America since colonial times. Thomas Jefferson grew artichokes in his gardens at Monticello and they've been an American favorite ever since.

It's best to start with seedlings, which you can obtain from a nursery or start indoors. Grow your artichokes in spring for harvests lasting through summer and into fall.

Soil and Fertilizing

Artichokes prefer fertile, well-drained sandy or loamy soil, with a balanced pH at or near 7.0. They also need a minimum soil temperature of 60˚ F. Once you've planted your seedlings, mulch the soil to keep weeds away and retain moisture.

When to Plant	Start indoors 8 weeks before first frost
Lighting	Full Sun
Seed Spacing	2-4′
Row Spacing	3-4′
Planting Depth	1/4″
Space After Thinning	N/A
Days to Germinate	10-21
Days to Maturity	60-90

Planting

Pick a sunny spot for your artichoke plants. Give them plenty of room to spread, too, since these spiky plants can get up to four feet tall and 4-6 feet wide. When planting seedlings, wait to transplant for 8-10 days after the last spring frost has passed, while nighttime temperatures are still about 50° F. In the central and southern states, your artichokes may flower during their first year of growth, but in areas with short growing seasons, artichokes won't flower until the second year, so be patient. To overwinter them, cut them back to a foot tall and mulch them.

Watering

Artichokes need about one inch of water per week, delivered a little at a time. Drip irrigation is recommended, but if you have to water from overhead, do so in the early afternoon.

Harvesting / Storage

Artichokes produce a larger flower on the main stem, with secondary flowers on either side. They're ready for harvest when they reach maximum size, but before the bud leaves open. If they start to open, harvest immediately! For multiple harvests in a year, harvest the top flower buds first, then the secondary ones as they ripen. You can eat the artichoke petals, heart, and stem, and they're all delicious when steamed or blanched, especially with butter or oil. A versatile veggie, chopped artichoke tastes fantastic in entrees, dips, and side dishes alike. It's fine to store fresh artichokes in the refrigerator at temperatures just above freezing. The hearts can be pickled or preserved in olive oil for later enjoyment, and can also be blanched and then frozen in batches.

Asparagus, Crowns

An attractive and delicious perennial vegetable, asparagus can thrive for years. It may grow for up to 20 years or more in the same spot, given the proper care.

A tasty addition to meals, soups, and salads, this easy-to-cook vegetable is low in calories and high in vitamin A, riboflavin, and thiamine.

Soil and Fertilizing

Asparagus prefers a deep, well-drained sandy soil with a pH level between 6-7, but can do just fine in other soils as long as they're well-drained. Too much rain or poorly drained soil will threaten the health of the plants.

When to Plant Crowns	When daytime temp exceeds 75-85°F
Lighting	Full Sun
Seed Spacing	12-14″
Row Spacing	4 1/2′
Planting Depth	6-8″
Space After Thinning	N/A
Days to Germinate	N/A
Days to Maturity	One year after planting

Planting and Watering Crowns

Asparagus prefers sunny days, and needs a long growing season to do best, with ideal daily temperatures of 75-85°F and nightly temperatures of 60-70°F.

Choose healthy crowns with firm, fleshy roots. Avoid shriveled or papery roots, because they're unlikely to produce.

It is best to fertilize based on soil test results. But if you lack those results, spread nitrogen at 75 pounds an acre; phosphorous at a rate 250 pounds per acre; and potassium at 300 pounds per acre. Scale down this amount based on the size of your asparagus patch.

Create a V-shaped trench 6-8 inches deep for your crowns, and apply super triple superphosphate (0-46-0) in the trench at 200 pounds per acre in addition to the other phosphorous you've applied. Plant your crowns 12-14 inches apart for thicker spears; 8-10 inches is sufficient for thinner spears. Don't worry about the direction the buds are facing. Cover your crowns with 1-2 inches of soil to protect them from the sun.

As the asparagus begins to grow, fill the trench gradually with more soil, being careful not to cover the foliage. It should reach ground level by the end of the growing season. Side dress a 5-10-10 fertilizer in late July or early August, at the rate indicated by your soil test.

Asparagus needs a decent application of water to produce well during the first year of growth. Irrigate weekly, wetting the soil to eight inches below the surface. After the first year, cut back to 2-3 inches of water, applied slowly, every two weeks when the weather is dry enough to require it

Asparagus, Seeds

Planting and Watering Seedlings

Soak asparagus seeds for two days at a temperature of 85-90°F (use a heating mat) and start growing them in seedling pots 12-14 weeks before field planting time. (Plant only when danger of frost has passed). Use a sterile growing medium containing vermiculite and peat moss, planting seeds ¾ of an inch deep in two inch diameter pots, or seed 2 inches by 2 inches in flats. Germinate the seeds at 75-8°F.

Apply a soluble, complete fertilizer, such as 15-15-15, at half the recommended rate 4, 8, and 12 weeks after sowing the seeds. Rinse the foliage lightly with water after fertilizing to avoid injury to the tender growth. Excessive fertilization promotes large, over-tender tops and small root systems with limited reserves in the storage roots.

Asparagus needs a decent application of water to produce well during the first year of growth. Irrigate weekly, wetting the soil to eight inches below the surface. After the first year, cut back to 2-3 inches of water, applied slowly, every two weeks when the weather is dry enough to require it.

When to Plant Seeds	In late winter greenhouse of after final spring frost
Lighting	Full Sun
Seed Spacing	2-5″
Row Spacing	2′
Planting Depth	1/4″
Space After Thinning	Remove female plants for highest yields
Days to Germinate	2-8 weeks
Days to Maturity	One year after planting

To further maximize your yield, weed out the female flowers. Otherwise, the female plants will go to seed rather than focusing on growing spears. Check the seedlings closely when the flowers start to appear. You'll need a magnifier for this, because they're very small. Female flowers have three-lobed pistils; male flowers are larger and longer.

Asparagus Continued

Harvesting / Storage

In fall of the first year, towards end of the growing season, clear browned/dead ferns away. The following spring, broadcast lime as needed, and add fertilizer and herbicide as indicated from a soil test.

Each succeeding fall continue to remove brush. And in spring, before the asparagus emerges, broadcast lime if your soil test indicates to do so, spread half the recommended fertilizer, apply the herbicide, and irrigate in one inch of water.

Wait until the year after planting to harvest your asparagus. You can do so in one of two ways: snapping or cutting the spears, once they are between 7-10 inches in length. Use a specially designed asparagus knife if you cut, taking the spears at a point an inch below the soil line. Avoid cutting too deep, or you may damage the crown. You can protect against this by building a 4-inch ridge of soil around the spears as they start to appear.

If you prefer to snap, bend the spear until it breaks, leaving a stub at the surface. One reason to cut rather than to snap is that diseases may attack the exposed stub.

Asparagus is best eaten fresh. However, it will store for up to two weeks in the refrigerator. Trim an inch off the ends, and put bundles in glass containers where they can stand up in an inch of water. Cover the top part loosely in plastic and refrigerate. Change the water when it gets cloudy.

You can also freeze asparagus by chopping it into one-inch pieces, blanching and then plunging it into an ice bath. Next, separate and spread the individual pieces on a cookie sheet. When frozen, you can then place them in a container for freezing up to a year. The frozen pieces can be cooked without thawing in soups and other dishes.

Beans: Dry, Lima, & Snap

Beans are one of the most rewarding crops you can grow. The plants are easy to grow, vigorous, thrive over a wide temperature range and provide and abundant harvest of tender, tasty pods or colorful, rich-tasting seeds in a relatively short time. There are a myriad of varieties to try and perhaps that's the reason why two-thirds of all gardeners raise them.

Beans have been the most important vegetable crop through the ages. They are the best vegetable source of protein and today in many societies beans are still the staple of life. Dry, Lima and green beans originated in South America. Dry beans have been cultivated for more than 7,500 years. Lima and green beans have been grown for around 4,500 years.

Days to Maturity

Maturity time varies with location and growing season and is influenced by soil and weather conditions. The days to maturity cited here gives the approximate number of days from transplanting until the first peas are ready to pick.

Keep in mind that the maturity date is an estimate of when the first peas will be ready to harvest. Variations in your garden can be due to differences in growing season, soil fertility and other conditions where they were tested.

When to Plant	1-8 weeks after last frost
Lighting	Full Sun
Seed Spacing	2-3″
Row Spacing	18-36″
Planting Depth	1″
Space After Thinning	8-12″
Days to Germinate	8-16
Days to Maturity	55-75

Which Bean Type for You?

Green, Lima and dry beans all come in bush and pole varieties. Bush varieties produce a short, bushy plant (some types do form tendrils and are called half runners). In general, bush-types yield an earlier crop that is harvested over a shorter period. Pole varieties produce a single vine with stems that must be supported. Pole-types take a little longer to produce pods and are best if you want a sustained harvest.

Green, Snap, or String Beans: All refer to the popular green bean that's grown for its tasty pods. The "string" has been bred out of most varieties.

French Beans: Another type of green bean that's really delicious, but just a bit more finicky to grow – they don't do well in cool, wet weather. Harvest when the pods are very slender, about 1/8 inch in diameter for the sweetest, most tender flavor. At peak harvest time this will mean picking the beans about every other day.

Wax Beans: These are the yellow version of green beans. They generally have a milder flavor.

Dry Beans: These varieties are grown for their dry mature seeds. When used fresh, they are referred to as shell beans. You can eat their pods fresh, but they are very fibrous.

Lima Beans: There is nothing like the flavor of freshly shelled and cooked lima beans. Sweet, delectable and tasty, nothing like the starchy, mealy beans you buy at the store.

Beans: Snap, Dry & Lima Continued

Soil Preparation

Beans thrive in deep, rich, well-drained soil in a sunny location. The plants do best in soil with a pH ranging from 5.5-7.0. We recommend testing your soil in the fall and adjusting the pH range, if needed, at that time. Fall is also a good time for deep spading or double digging (to a depth of 8-12 inches) and for incorporating organic matter into your soil. The addition of compost, leaf mold or peat moss provides organic matter lightens and aerates heavy soils as well as increasing the moisture holding capacity of sandy soils.

In the spring, rake to break up clods and remove stones. Fertilize as recommended by your soil test results.

Fertilizing

Beans don't require much fertilizer, especially nitrogen, but to help them along, when the seedlings are 2 -4 inches tall you can fertilize them with a complete organic fertilizer. Alternatively you can work a 2-3 inch layer of compost into your pea bed. You can also broadcast 1-2 pounds of 5-10-10 fertilizer over each 100 square feet of garden space and work it into the top 2-3 inches of soil (do this a day or two before planting).

CAUTION: When fertilizing, please keep this in mind – MORE IS NOT BETTER – boosting the amount of fertilizer can damage your plants. An overdose of fertilizer causes plants to grow too rapidly and damage new roots thereby stunting plant growth and significantly setting back your harvest.

Water

Beans need an evenly moist soil. Too little or too much slows the growth and makes the plants more susceptible to diseases and pests. Water plants lightly (about 1/4 inch) regularly from germination to flowering. A 2-4 inch layer of grass clippings or other organic mulch around the base of the plants as soon as they germinate will help keep the soil evenly moist.

Harvesting

Green beans are ready for harvest about 2 weeks after bloom. Pick pods that are nearly full size, when they are firm enough to snap when bent, but before the seeds inside have become visibly enlarged. At this stage the pods have a low fiber content and the flesh will be firm and crispy. Keep plants well picked to extend harvest and increase yield.

Dry beans let the pads stay on the plants until the beans are large and hard and the pods are dry and papery. If you have wet weather after the beans have filled the pods, but are not yet dry, pull the plants and set them in a protected place such as a garage or shed. Place them in single layers in cardboard boxes so that no beans are lost if the pods shatter. Don't let these drying beans freeze. Once the pods are dry and crackly, you can shell them. The easiest way to this is to place the pods in any old pillowcase and tie it shut. Put the pillowcase in the dryer, turn it on low, and dry the beans for about half an hour. The dry heat and bouncing action open the pods and release the beans. Pour the contents of the pillowcase out into a box or pail. We recommend doing this outdoors on a windy day as the papery debris will blow away and the heavy beans will fall into your container. If Mother Nature isn't cooperative you can supply the wind with a fan. Using the dryer method ensures that the beans are thoroughly and evenly dry, so they can be stored immediately. If you use another method, your beans may not be dry enough to store when they're shelled. Leave them in a single layer in a warm, airy place until they're hard enough so that you can't dent them with your fingernail. Once the beans are dried you can store them in airtight containers in a cool, dry place. NOTE: Don't use the dryer method if you're saving the seeds for planting, as the heat can kill them.

Beans, Fava

Cool season fava beans are a great choice, as they're easy to grow, don't need fertilizing, attract early pollinators, and improve the soil.

They actually help replenish soil nitrogen.

An ancient crop hailing from the Mediterranean region, fava beans sport a buttery texture and a nutty flavor. Large, fragrant white or purple flowers are another benefit to growing these beans in your garden. Their benefits continue in the kitchen, as both the leaf and bean are edible, and can be boiled or sautéed.

The bean pods are thick, with cottony padding encasing up to seven dark green beans. The pods themselves aren't edible, so they may require shelling, and remember to remove each bean's waxy coating first.

Soil and Fertilizing

Loosen the soil with a spade or fork, and then smooth it with a rake. Plant your fava beans in the early spring, or in the fall in mild winter areas.

When to Plant	Direct sow early spring
Lighting	Full Sun
Seed Spacing	3″
Row Spacing	24″
Planting Depth	1/2″
Space After Thinning	6″
Days to Germinate	6-16
Days to Maturity	85

Planting

A legume inoculant like rhizobium bacteria is recommended for the initial planting for best germination results.

Watering

Water by soaking the soil every few days. A good rule is to provide about one inch of water per week.

Harvesting

Pods may be harvested when the seeds are pea-sized, but you can also wait until the pods are completely filled out.

Special Notes

- Fava beans require a long, cool growing season. They don't tolerate hot summer weather well, and may not set if the temperature rises too high.
- Sow them about the same time as peas, once the soil temperature exceeds 45°F.
- The plants can grow up to four feet tall and become laden with beans, so they need staking or a trellis for best results.

Beans, Pole

Beans are one of the most popular vegetables for the home garden, and one of the easiest to grow. They're warm season, heavy-yielding plants, providing harvests for months. Green beans come in three different types based on their growing characteristics, bush, the compact variety; pole, featured here; and half runner which is a combination of them both.

Pole beans grow in a vining manner and require some support, such as a trellis or cage. Their vertical growing habit makes them great space-savers, versus the thick, horizontal growth of the bush variety. Pole beans also require a little less maintenance. They make very tasty side dishes, as well as hearty soups that are often enjoyed with cornbread or rice, and can also be canned or frozen for later enjoyment.

Our pole varieties include Scarlet Emperor Runner Bean, the best-selling runner bean, Blue Lake (a fantastic freezing and canning variety) and distinctively delicious Kentucky Wonder Pole.

Soil and Fertilizing

Beans typically need more potassium and phosphorous than nitrogen, which is why you should get soil test results before feeding. They also prefer a deep, well drained, sandy soil pH of 6.5-7.5, with an ideal soil temperature of 75-85°F before germinating.

When to Plant	1-8 weeks after last frost
Lighting	Full Sun
Seed Spacing	3-5″
Row Spacing	18-36″
Planting Depth	1″
Space After Thinning	8-12″
Days to Germinate	7-10
Days to Maturity	55-75

Planting

Most bean vines grow up to 8 feet, so they will need special support, such as a pole, trellis, or other structure for the beans to climb. It's best to set up the support before the beans are planted. One way you can handle this is to use three poles (bamboo poles are inexpensive) to make a tepee instead of planting in rows. The poles should be inserted one inch deep into the soil, and at least 2 feet apart. Remove a shovel full of dirt by each tepee, and fill it with some compost.

Our bean seeds aren't treated with fungicides, so they shouldn't be planted in very wet or cold soil. When the ground is sufficiently warm or dry, plant 5-6 seeds one inch in depth at the base of each pole, and tamp the soil down firmly. To enjoy continuous harvests, plant beans every two weeks until the first week in July.

Watering

Beans need even moisture for best growth. Provide about one inch of water per week, especially during flowering and pod development, watering deeply and infrequently. Mulch after the second set of true leaves appear to keep the moisture in.

Harvesting / Storage

Beans are best when used as soon as possible after harvest, but they can be stored in the refrigerator for a few days if cooled immediately. This applies to freezing and canning as well. For best quality, canning and freezing should be done within a few hours after picking. Harvest your beans while still green, before the seed can be seen through the pod, and while the pods are still tender. You will know they're ready if the pods break easily with a snap. For the best quality, harvest in the early morning.

Celery

Celery, a popular and versatile vegetable, has specific growing needs, and when they are met, you will get the best yields.

Our Tall Utah is a very disease resistant, cool season variety, with stringless, thick stalks. It's one of the finest and less particular varieties to grow, and is recommended for Northern climates.

One of the greatest rewards of growing celery is the tasty soups and salads it will enhance.

Soil and Fertilizing

Celery requires a rich, fertile soil, high in organic matter, and a minimum soil temperature of 60° Fahrenheit. The pH should between 6.0 and 6.8.

It can tolerate damp soil, as it was originally a wetland plant. It is best to have your soil tested before planting, so you know what nutrients and pH adjustments may be needed. For a thorough test, consult your local extension office.

When to Plant	Indoors 12 weeks before last frost
Lighting	Partial Shade
Seed Spacing	1/2″
Row Spacing	30″
Planting Depth	1/2″
Space After Thinning	6″
Days to Germinate	10-20
Days to Maturity	80

Use a clean organic mulch to suppress weeds and retain moisture in the soil, as celery doesn't manage heat well, and its small root system can't compete with weeds. Planting Celery requires a long growing season, so you need to plant seeds indoors 12 weeks before last frost. They grow best when nighttime temperatures are around 50° Fahrenheit, and average daytime temperatures stay between 60° and 70° Fahrenheit.

Before transplanting seedlings, harden them off for 7-10 days by reducing water. Transplant 6-12 inches apart in rows 24 inches apart.

Watering

Celery needs plenty of moisture, so water regularly, ensuring it gets 1-2 inches each week during growing season.

Harvesting / Storage

You can harvest individual stalks when they are at least 6 inches long from the soil line to the first node. Plants can be harvested in their entirety when they're three inches across at the base. The best celery is compact rather than open at the center.

Refrigerate harvested celery as soon as possible. Keep stored celery at a humidity near 95%, and a temperature between 31° and 32° Fahrenheit.

Corn

One of the hallmarks of summer is barbecues, and these food celebrations wouldn't be complete without corn. The home-grown version, needless to say, offers the freshest, sweetest taste possible. Whether eaten indoors or out, corn is a favorite of home gardeners—grilled, in salads, boiled, baked and even popped.

Soil and Fertilizing

When to Plant	Direct sow after last frost
Lighting	Full Sun
Seed Spacing	4″
Row Spacing	36″
Planting Depth	2″
Space After Thinning	8-12″
Days to Germinate	4-7
Days to Maturity	60-80

Corn requires a rich, slightly acidic soil with a pH between 6.0 and 6.5, at a minimum soil temperature of 60°F for germination.

Corn is a heavy feeder, and in particular needs nitrogen and phosphorous in large amounts. During growing season, it's generally advised to add a side dressing of nitrogen in the form of fish emulsion or manure tea. This can be sprinkled on the sides of the rows, or put in a circle around each individual plant. Pale green leaves indicate a nitrogen deficiency, and purple-tinged leaves mean the plant needs more phosphorous.

Planting

Our seeds are NOT treated with a fungicide, so keep in mind that the soil must be warm before they can be planted. Corn pollen is wind-borne, so plant four or more short rows of a single hybrid side-by-side, or plant them in a circle for the best pollination. Do not plant different varieties next to each other, or you'll end up with cross-pollination.

Rotate your crops annually so the soil doesn't get depleted of nutrients or invite diseases. Plant corn in a different area each season. Plant some early-, mid- and late-season varieties for continuous harvests; and if growing the plants in a circle, plant three seeds in a circle around two feet in diameter. For normal corn, the planting depth is two inches—one inch for sugary enhanced varieties.

During the growing phase, keep the rows free of weeds, either by hilling up the soil or using mulch, as corn has shallow roots and can't abide the competition.

Watering

Corn plants need consistent moisture, at a rate of at least one inch per week. Water your corn early in the day, and avoid wetting the foliage, as that may cause fungal issues.

Harvesting / Storage

Sweet corn is ready 20 days after the appearance of the first silk strands. The silks should be dry and brown by this point; the kernels should be smooth and plump, and should pop when pushed with a thumbnail. Note that ears may mature several days apart, even on the same plant.

Cook and eat your sweet corn right away, or store it at a cool temperature; a refrigerator is fine. Don't let it remain at room temperature or get overheated, because heat will cause the sugar to turn to starch, resulting in a bland flavor.

Cucumber

Cucumbers are warm-season, prolific vines prized for fresh eating, salads, and pickling. They're generally easy to grow when given warm soil, plenty of sun, and consistent moisture.

When to Plant	Direct sow 1-2 weeks after last frost
Lighting	Partial Shade
Seed Spacing	2″
Row Spacing	2-4′
Planting Depth	1/2″
Space After Thinning	6-12″
Days to Germinate	3-7
Days to Maturity	50-60

Soil and Fertilizing

Cucumbers prefer well-draining soil rich in organic matter with a pH around 6.0–7.0. Work in compost or aged manure before planting to boost fertility. Avoid high nitrogen fertilizers once vines start flowering — too much nitrogen promotes leafy growth at the expense of fruit.

Planting

Cucumbers are a warm-season crop and should be planted 1–2 weeks after the last frost, once soil temperatures have warmed to at least 60–70°F. Seeds may be direct sown outdoors ½–1 inch deep, or started indoors 3–4 weeks before transplanting. Space plants about 12 inches apart in rows 5–6 feet apart, or plant in hills and thin to the strongest seedlings. Avoid planting too early, as cold soil can delay growth or cause seed rot. Consistently warm conditions will encourage quick germination and vigorous growth.

Watering

Cucumbers love consistent moisture. Aim for about 1 inch of water per week, more in hot weather. Water early in the day and keep leaves dry to reduce disease risk. Mulch around plants to conserve moisture and suppress weeds.

Pests and Diseases

Common issues include cucumber beetles, powdery mildew, bacterial wilt, slugs, and vine borers. Practice crop rotation, avoid overhead watering, pick pests off by hand, and choose resistant varieties when possible.

Harvesting / Storage

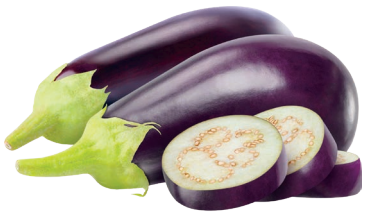
Cucumbers are ready to harvest when fruit is firm, evenly colored, and still tender. Slicing types are typically picked at 6–8 inches long, while pickling varieties are harvested smaller, usually 2–6 inches. Harvest frequently to encourage continued production, as overripe fruit left on the vine can reduce yields. Use scissors or a sharp knife to cut fruit from the vine to prevent plant damage. Fresh cucumbers store best at 45–55°F with high humidity and will keep for up to 10–14 days. Avoid storing below 40°F, as chilling injury can cause pitting and watery flesh. For best quality, use shortly after harvest.

Eggplant

This warm season vegetable yields delicious edibles, as well as attractive purple-blue and white flowers that are beautiful for landscaping.

It's best to start with seedlings, which you can obtain from a nursery or start indoors. Grow your eggplant in spring for harvests lasting through summer and into fall.

When to Plant	Indoors 8 weeks before last frost
Lighting	Full Sun
Seed Spacing	2-4′
Row Spacing	3-4′
Planting Depth	1/4″
Space After Thinning	N/A
Days to Germinate	10-21
Days to Maturity	60-90



Soil and Fertilizing

Eggplants prefer fertile, well-drained sandy or loamy soil, with a balanced pH at or near 7.0. They also need a minimum soil temperature of 60˚ F. Once you've planted your seedlings, mulch the soil to keep weeds away and retain moisture.

Planting

Pick a sunny spot for your eggplant. Give them plenty of room to spread, too, since these plants can get up to two feet tall and 2-4 feet wide. When planting seedlings, wait to transplant for 8-10 days after the last spring frost has passed, while nighttime temperatures are still about 70°F.

Eggplants are heavy feeders, but avoid high-nitrogen fertilizers. They may encourage lush foliage growth at the expense of fruit.

Pinch off blossoms 2 to 4 weeks before first expected frost so that plants channel energy into ripening existing fruit, not producing new ones.

Watering

Eggplant requires will draining soil and has moderate moisture needs.

Harvesting / Storage

Harvest 16 to 24 weeks after sowing when the skin of the fruit is shiny and unwrinkled. Don't wait too long to harvest! As soon as the skin does not rebound to gentle pressure from your finger, it's ripe.

When harvesting, do not pull the fruit (as it won't come off). Cut the fruit with a sharp knife or pruning shears close to the stem, leaving about an inch of it attached.

Eggplants can be stored for up to two weeks in humid conditions no lower than 50 degrees Fahrenheit.

Store in the refrigerator where it will keep for several days. Do not wash or cut in advance to avoid damaging the skin, which will quickly perish if exposed.

Garlic

Garlic comes in two basic types: hardneck, which has a woody stem, and softneck, which is stemless, producing only frost-hardy leaves above ground. Both yield bulbs that split into multiple individual cloves, and there are numerous varieties of each type.

Softneck garlic produces more cloves than hardneck, but hardneck cloves tend to be stronger and hotter in flavor. Softneck cloves typically store longer than their hardneck counterparts.

The following chart assumes you're planting from cloves, which is the standard way to propagate garlic.

When to Plant	See Below
Lighting	Full Sun
Seed Spacing	4-6″
Row Spacing	15-24″
Planting Depth	1-4″
Space After Thinning	N/A
Days to Germinate	3-14
Days to Maturity	80-90 (Hardneck), 45-70 (Softneck

Soil and Fertilizing

Garlic of both types requires loose, fertile soil. Add organic matter so soil remains loose through the long growing season. If you have soil with a high clay content add large amounts of compost to beds before planting. Lighter soils that have naturally loose textures need only small amounts of organic matter, or green manures like clover or rye grass.

Fertilize moderately according to your soil test results, as soon as your garlic starts to grow. A side-dressing of strong compost or chicken manure will give your garlic a nice boost.

Note: DO NOT fertilize once bulbing has begun. Fertilizing is useless then, and can even be harmful.

Planting

Garlic survives bitterly cold winters underground, or grows frost-hardy leaves where winters are mild to moderate.

North: Plant garlic 4-6 weeks before the ground freezes. In areas with very harsh winter conditions plant softneck garlic in the spring.

South: Where winters are milder, plant garlic October through January.

Break the bulb into individual cloves. Small cloves usually grow small bulbs, so plant only the larger ones. Use the smaller cloves in your kitchen. Plant cloves an inch deep, root side down, where the winter is mild.

Where the winter is severe, plant cloves 2-4 inches deep and mulch lightly immediately after planting. In spring, the garlic will have no trouble pushing through an inch of mulch. Minimum spacing on raised beds is 4-8 inches. To grow the largest bulbs, try spacing your plants 6-12 inches apart.

After your garlic has overwintered, it must be kept well-weeded, as it has shallow roots and can't handle much competition for resources. Garlic overwinters where the winters are harsh; in locations with milder winters, it often grows frost-hardy leaves that really take off when the weather warms up in the spring.

Garlic Continued

Watering

Water regularly to keep the soil moist, but not waterlogged. This is especially important during the first few weeks of spring growth, but should be continued during the rapid growth phase.

Harvesting / Storage

Because time to maturity varies according to the weather each year, watch the plants instead of the calendar. The leaves will start to turn brown from the bottom up. Every few days, scrape soil away from a bulb to check its maturity. If it looks too small or the skin is still loose, cover it back up and pat down the soil. Once you have nice-sized bulbs and the skin is tight, stop watering for a few days, then harvest.

In loose soils, you can pull up your garlic plants by hand. Otherwise, loosen and lift the soil with a spading fork. Once you've harvested the bulbs, get them out of the direct sunlight right away. Brush off the soil, but don't wash the roots, since you'll need to dry and cure them later.

Drying (Curing)

Depending on the ambient humidity, you'll need to cure your garlic for 3-8 weeks in a cool, dark, dry place before storage. You can braid together softneck types in bundles of 8-12 plants and hang them to cure. You can also spread them out in a single layer on drying racks or screens. A fan set on low, to ensure good air circulation, will accelerate the curing process. After curing, trim the roots and remove the stalks half an inch above the bulb. Leave the skin on the bulbs.

Garlic stores best at 45-55°F at low humidity. Storage below 40°F makes garlic sprout.

Special Notes

Your garlic cloves need to be exposed to temperatures below 65°F or they won't form bulbs. Don't let hardneck put its energy into flower stalks, or you'll end up with a substandard bulb. To maximize your yield, cut the seed stalks off when they reach 8-9 inches tall. These "scapes" add a nice garlicky flavor to stir-fry and other dishes.

Garlic, Elephant

Elephant garlic, also called great-headed or Oriental garlic, is more closely related to leeks than to true garlic. But it has the same growth habits as regular garlic, with a few minor differences. This cold hardy allium yields 3-4 cloves that are often the size of regular garlic bulbs, hence the name. It's very mild-flavored, with an onion-like taste.

When to Plant	Late Summer to Early Fall
Lighting	Full Sun
Seed Spacing	12″
Row Spacing	3′
Planting Depth	4-6″
Space After Thinning	N/A
Days to Germinate	2-31
Days to Maturity	90+

Soil and Fertilizing

Elephant garlic requires loose, fertile soil. Add organic matter, to keep the soil loose through the long growing season. If you have soil with a high clay content, add large amounts of compost to beds before planting. Lighter soils that have naturally loose textures need only small amounts of organic matter, or green manures like clover or rye grass.

Fertilize moderately according to your soil test results. DO NOT fertilize once bulbing has begun, as it may hinder bulb development.

Planting

Like true garlic, elephant garlic overwinters where the winters are harsh; in locations with milder winters, it often grows frost-hardy leaves. You can plant from October through January in milder climates, though you may want to plant from September through November where it's colder, to give the plants enough time to develop a healthy root system before winter closes in.

Break the bulb into individual cloves and plant them 4-6 inches deep, at least 12 inches apart. Weed regularly, because like most alliums, elephant garlic has shallow roots and can't handle much competition for resources. You can remove the edible scapes (flower stalks on top) and use them in cooking, or even pickle them.

Watering

Water regularly to keep the soil moist, but not waterlogged. This is especially important during the first few weeks of spring growth, but should be continued during the rapid growth phase.

Harvesting / Storage

When your elephant garlic's leaves start drying out and falling over, stop watering for a few days, then harvest. Don't wait too long, or the cloves will start separating. In loose soils, you can pull them up by hand; otherwise, loosen and lift the soil with a spading fork. Once you've harvested the bulbs, get them out of the direct sunlight right away. Brush off the soil, but don't wash the roots, since you'll need to cure them later.

Drying (Curing)

Depending on the ambient humidity, you'll need to cure your elephant garlic for 3-8 weeks in a cool, dark, dry place before storage. Some growers braid the tops together and hang them up in small bunches to facilitate curing. A fan set on low, to ensure good air circulation, will accelerate the curing process. After curing, a tough

Garlic, Elephant Continued

shell forms around the bulbs.

Next, trim the roots and remove the stalks half an inch above the bulb. Leave the skin on the bulbs, and store your elephant garlic 45-55°F with an ambient humidity of 50% or less. It will last as long as 10 months in storage, and will develop a fuller flavor than fresh elephant garlic.

Special Notes

- Elephant garlic can grow as high as five feet, producing attractive flowers. Some gardeners allow them to develop as ornamentals. However, you'll have larger bulbs if you clip off the flower stalks when they're 8-9 inches tall.
- Elephant garlic needs cold weather to divide properly. If you plant in the spring, it will yield cloveless onion-like bulbs called "rounds." If you replant them in the fall (or just leave them in the ground) they'll form normal bulbs by the following spring.
- Little bulblets called "corms" may also develop outside a garlic bulb. Some gardeners toss them, but you can plant them to produce more garlic. After scoring, soak them in water overnight and plant them. The developing plants will be smaller than those started from cloves, and will produce only rounds the first year. These can be cooked like pearl onions and are very tasty. If you plant the rounds a second year, however, you'll end up with a regular bulb with 4-6 large cloves.

Gourds

Gourds are vigorous vining plants in the cucurbit family that are grown for decorative or craft uses and require warm weather, space, and durable vines to produce mature fruit.

Soil and Fertilizing

Gourds prefer well-drained, fertile soil rich in organic matter and with a pH in the mid-range (around 6.0–7.0). Work compost or aged manure into the soil before planting to boost nutrients. Gourds are moderate to heavy feeders, so incorporating plenty of organic matter at planting time supports vigorous vine growth and fruit set.

When to Plant	Indoors 4-5 weeks before last frost
Lighting	Full Sun
Seed Spacing	12″
Row Spacing	3′
Planting Depth	4-6″
Space After Thinning	N/A
Days to Germinate	2-31
Days to Maturity	90+

Planting

Start gourd seeds indoors 4-5 weeks before your last frost date and transplant after the danger of frost has passed and soil has warmed, or sow seeds directly outdoors once soil is warm (typically late spring to early summer). Plant seeds about 1-2 inches deep in rows spaced about 8 feet apart, and thin or transplant so that plants are about 4-5 feet apart along the row. Gourds can also be planted on mounded hills to improve drainage and give vines room to spread. Support long vines with a sturdy trellis if space is limited.

Watering

Keep soil evenly moist, especially during germination and early vine growth. Gourds typically need about 1 inch of water per week; water deeply and avoid wetting the foliage to reduce the risk of fungal diseases. Mulch around plants to conserve moisture and suppress weeds.

Pests and Diseases

Gourds can be susceptible to cucumber beetles, squash bugs, and powdery mildew, similar to other cucurbits. Row covers during early growth can protect young plants from insects, and good garden hygiene and crop rotation help manage disease pressure.

Harvesting / Storage

Harvest gourds when the rind is fully hardened and mature, and stems begin to dry and turn brown. Use sharp shears or a knife to cut fruit from the vine, leaving a bit of stem attached. This helps protect the fruit and improves storage life. Handle gourds gently to avoid bruising.

After harvest, cure gourds in a warm, well-ventilated place out of direct sunlight until they are completely dry and seeds rattle inside — this can take several weeks. Turn them periodically to ensure even drying, and discard any that show signs of rot. Properly cured gourds can be used for crafts, decoration, and ornamental uses throughout the year.

Herbs

Herbs are of great value to the kitchen gardener, because in addition to attractive greenery and flowers, they add scents and tastes that boost our moods and improve just about every type of meal. How ironic, then, that they're among the easiest of plants to grow! All they need is sunlight, soil, and a modicum of water to produce lush, useful foliage and flowers.

Soil and Fertilizing

To find your frost date to determine whether the soil is ready, click here. Most of the herbs listed above do best in well-drained but moist soil, enriched with a vegetable fertilizer. Some even prefer average to poor soils.

Thinning

Thin plants to suggested spacing (see chart) when they reach around 2 inches high.

Watering

Be careful not to over water. Normal rain and an occasional watering should be enough to keep your herbs growing. In fact, most of these herbs do well with very little water. The exceptions are listed in the Special Notes Section below.

Harvesting / Storage

Most of the herbs listed here can be harvested as needed. Use a pruner to remove sprigs or individual leaves, and never harvest more than a third of a plant all at once. If you wish to dry your herbs for later use, do so in a cool, dry, dark place.

Special Notes

- Basil: Pinch back or prune the tips to maximize the plant's bushiness.
- Bread Poppy: Mix seeds with a cup of sand or other inert material and broadcast over planting area.
- Calendula: For earlier blooms, start indoors 6-8 weeks before last frost.
- Catnip: Needs a moderate amount of water.
- Dill: May require staking. Tastes best when harvested in mid-summer.
- Marjoram: Pick the leaves after the flowers bud, but before they open.
- Parsley: Soak seeds for 24 hours, then plant as soon as soil can be worked.
- Sage: For earlier harvest, start seeds indoors in March.
- Thyme: Don't water at all. Pinch back or prune the tips to maximize the plant's bushiness.
- Valerian: May need staking. Harvest valerian root for tea when the plant is over 700 days (nearly two years) old.

Herbs Continued

Herb	When to Plant	Lighting	Seed Spacing	Row Spacing	Planting Depth	Space After Thinning	Days to Germinate	Days to Maturity
Basil	When soil is workable	Partial Shade	1/4″	30″	1/2″	12″	7-10	78
Borage	When soil is workable	Partial Shade	1/2″	24″	1/8″	10-12″	7-14	50-60
Bread Poppy	When soil is workable	Full Sun	1″	24″	1/8″	6-8″	7-10	85-120
Calendula	After last frost	Full Sun	1/2″	24-36″	1/4″	10-15″	10-14	65-80
Catnip	When soil is workable	Partial Shade	1″	18″	1/4″	18″	7-21	85
Chives	When soil is workable	Partial Shade	1″	12″	1/4″	4″	10-15	80
Cilantro	After last frost	Full Sun	1″	15″	1/2″	8″	15-20	60
Dill	After last frost	Full Sun	1″	2″	1/4″	8″	10-15	40
Fennel	When soil is workable	Full Sun	1″	2″	1/4″	10″	12-18	80
Marjoram	After last frost	Full Sun	1″	18″	1/4″	12″	10-15	70
Oregano	After last frost	Full Sun	1″	2″	1/16″	18″	10-20	90
Parsley	When soil is workable	Full Sun	1″	15″	1/4″	3-6″	20-30	60
Peppermint	When soil is workable	Full Sun	1″	18″	1/4″	8″	10-12	85
Sage	After last frost	Full Sun	1″	18″	1/4″	15″	10-20	90
Thyme	After last frost	Full Sun	1″	18:	1/4″	8-12″	14-28	50
Valerian	After last frost	Partial Shade	12-18″	18-36″	1/4	18-36″	7-14	2 years

Horseradish

Horseradish is a very cold hardy perennial, the best roots have endured multiple frosts. Tap roots can go down 10 feet if left alone, and in loamy soil. Beautiful green foliage that grows under 2 feet tall.

Soil and Fertilizing

Soil must be moist, fertile, and loamy. Clay soil may be hard for the roots to grow down. Till soil 8-10 inches down for optimum growth. Fertilize in early spring.

When to Plant	Late Fall or Early Spring
Lighting	Full Sun
Seed Spacing	18″
Row Spacing	18″
Planting Depth	3-4″
Space After Thinning	N/A
Days to Germinate	N/A
Days to Maturity	90

Planting

Dig a trench 3-4 inches deep, place roots 18 inches apart and at a 45 degree angle, and cover over with topsoil after planting, Horseradish can tend to take over your garden, so you may want to keep contained.

Watering

Water regularly to keep moist.

Harvesting / Storage

Harvest in either spring or late fall for the best flavor, use a shovel or pitchfork to carefully dig up. Leaving some in the ground to propagate for the next year.

For storage you will want to trim foliage down to about 1 inch and wash and dry roots. Like carrots they can be stored in damp sand in a dark location. Avoid freezing temperatures.

Leeks

Leeks are a non-bulbing, cool season onion-relative with leaves that grow in a tight cluster up to several feet high. They are milder tasting than onions, and have a distinctive flavor that adds zest to soups and stews, and enhances stuffing, gratins, and casseroles. They also add a nice flavor when sautéed with other vegetables.

The white portion of the stem is used in cooking, just as with scallions.

Soil and Fertilizing

Leeks prefer a well-drained soil, rich in organic matter, with a slightly acidic pH of 6.0-6.8. Composting can help prepare the soil for leek cultivation. They require a minimum soil temperature of at least 40˚ F to mature.

When to Plant	8-10 weeks before last frost
Lighting	Partial Shade
Seed Spacing	1″
Row Spacing	10-12″
Planting Depth	1/2″
Space After Thinning	6″
Days to Germinate	5-7
Days to Maturity	120

Planting

Leeks can be direct-seeded or transplanted. Start your seeds indoors about 8-10 weeks before the last frost. Then transplant the seedlings into the garden two weeks before last frost, 4-6 inches apart, when the plants are at least 8 inches tall and as thick as a pencil. Leeks thrive in raised beds.

Plant them in an area where onions have not been grown in the past three years, as they can pick up pests and diseases onions leave behind.

To prepare the seedling for transplanting, cut off half the green leafy top and don't bend the roots. Afterward, mulch the plants to conserve soil moisture and deter weeds. Hill the soil or mulch around the stems to blanch them. The stems are blanched (kept white and edible) when they are under the soil away from the sun; if exposed to the sun, they'll turn green and inedible.

Watering

Leeks are shallow rooted, so you must keep them well-watered and protected from weeds. Mulch will help keep moisture in and weeds out. One inch of water per week should be sufficient.

Harvesting / Storage

Leeks are mature when the stalks are about 1 inch in diameter. This takes about 120 days from seed.

Loosen the soil before pulling up the leeks so they don't break off. You can let the hardy long-season leeks remain in the garden until just before the ground freezes or through the winter in warmer climates.

Harvested leeks can stay wrapped in plastic in the refrigerator for up to 2 weeks; cut off all but a few inches of the green tops so they are easy to store.

Lettuce

Lettuce, a cool season vegetable, is one of the easiest to grow and the fastest to mature—an ideal combination! Plant some in the spring for mid- summer harvests, and again mid-summer for fall yields. This is a great way to have fresh lettuce for months.

Types of Lettuces

Lettuce comes in two basic types: the compact, spherical "head" lettuce you may be familiar with from the grocery store, and the many looser-leafed types. We offer many varieties, including Bibb and Butter Lettuce, which are tasty and look lovely; standard Head Lettuce; Gourmet Lettuce Mix; Loose-Leaf Lettuce, including a beautiful red variety; Mesclun Mixes; and purple, red and green varieties of Romaine.

When to Plant	When soil can be worked
Lighting	Partial Shade
Seed Spacing	2-3″
Row Spacing	10-18″
Planting Depth	1/4″
Space After Thinning	12-15″
Days to Germinate	7
Days to Maturity	52

Soil and Fertilizing

All lettuce varieties require loose, fertile, loamy soil with a pH of 6 or above. Mulching helps conserve moisture and block weeds.

Planting

Lettuce is easy to direct sow, and it can grow in many different variations of sun and shade, including full sun, part shade, and in the shadow of taller plants.

Plant seeds when the soil can be worked, which is about 4-6 weeks before the last frost. Minimum soil temperature is 35° F. For continuous harvests, sow additional seeds every few weeks through mid-summer. You can also sow seeds in flats and transplant seedlings 4-5 weeks later. To do so, sow 4 seeds per inch. Transplant the young plants 12-15 inches apart, with the rows spaced 10-18 inches apart.

Watering

Water your lettuce regularly to keep the soil moist, but not waterlogged. This is especially important during the first few weeks of growth. Shade is important for summer germination.

Harvesting / Storage

Your lettuce is ready to harvest when the plants reach about 5-6 inches high. You can harvest plants in their entirety, or take individual leaves from the outside of the plant. Store your lettuce in the refrigerator.

Special Notes

- When lettuce is exposed to very high heat, bolting (flower production) can result, and this affects flavor
- Lettuce can tolerate light frost, but not hard
- Always use some type of organic weed control, as lettuce doesn't compete well with weeds

Muskmelon

Muskmelons are warm-season cucurbits grown for their sweet, aromatic fruit. They require full sun, warm soil, and plenty of space to vine in order to produce high-quality melons.

When to Plant	After last frost
Lighting	Partial Shade
Seed Spacing	4″
Row Spacing	5-6′
Planting Depth	1/2″
Space After Thinning	2′
Days to Germinate	5-10
Days to Maturity	70-100

Soil and Fertilizing

Muskmelons grow best in well-drained, fertile soil rich in organic matter with a pH between 6.0 and 6.8. Incorporate compost or well-aged manure before planting. Avoid excessive nitrogen, which promotes vine growth at the expense of fruit development.

Planting

Plant muskmelon seeds outdoors after the danger of frost has passed and soil temperatures have warmed to at least 65–70°F. Seeds may also be started indoors 3–4 weeks before transplanting. Sow seeds ½–1 inch deep and thin seedlings to 18–24 inches apart once established. Muskmelons may be planted in rows or hills to improve drainage and soil warmth.

Muskmelons are vigorous vining plants that spread quickly and require ample space. Vines may be trained onto sturdy trellises to save space and improve airflow, though fruits may need support as they mature. Allow vines to spread naturally if growing on the ground.

Watering

Provide consistent, deep watering throughout the growing season, especially during flowering and fruit set. Aim for about 1 inch of water per week. Reduce watering slightly as fruit ripens to improve flavor and prevent splitting. Avoid overhead watering to reduce disease pressure.

Pests and Diseases

Common pests include cucumber beetles, aphids, and squash bugs. Diseases such as powdery mildew and downy mildew may occur in humid conditions. Practice crop rotation, maintain good airflow, and remove plant debris to reduce issues.

Harvesting / Storage

Muskmelons are ready to harvest when fruit slips easily from the vine and develops a strong aroma with full netting and color. Harvest promptly at peak ripeness for best flavor. Muskmelons may be stored at cool temperatures for a short period, but are best enjoyed fresh.

Onions, Bulb

VARIETY AND ZONE: There are three essential facts to keep in mind about growing bulbing onions. FIRST: the bulb will be no bigger than the top. SECOND: the top completely stops growing when the bulb begins forming. So grow as big a top as you can as fast as you can. THIRD: grow a variety adapted to your zone. Change of day-length is what instructs or triggers the plant to change from growing top to making bulb while the lengths of day and night differ from North to South.

SHORT DAY ONIONS form bulbs as day length increases in spring. They are grown in the South, where mild winters allow fall planting and overwintering. By spring, plants have large tops that produce the sweet, large onions commonly found in supermarkets from late April through midsummer. Short Day varieties must be grown in the South, as they begin bulbing before summer regardless of planting location.

INTERMEDIATE DAY VARIETIES are planted very early in spring and are best suited to intermediate zones with long growing seasons and moderate day lengths. In northern regions, spring often arrives too late for these onions to size up before bulbing unless large transplants are used, such as those grown in the South.

LONG DAY VARIETIES are bred for northern climates. They grow foliage during long summer days and begin bulbing as day length decreases after June 21, typically from late July to early August. This timing allows bulbs to mature and dry before summer ends. Long Day onions perform poorly in the South, where days are not long enough, causing premature bulbing and small bulbs.

Soil and Fertilizing

Onions demand light, loose soil and do their best in sandy loam. Amend heavier ground with compost or manure. This is usually best done the previous autumn. The important thing is to encourage them to grow tops as rapidly as possible. This means lots of fertilizer early on. Onions have coarse, small root systems. So place the fertilizer close to the plants and side-dress and/or foliar feed them. Once bulbing beings there is no point in fertilizing them anymore; the bulb's size is already determined by the size of the top.

Planting

Onion seedlings are quite hardy and can withstand 20°F frost. They should be set out 4-6 weeks prior to the last expected spring frost. When your plants arrive they should appear to be quite dry. DO NOT WET THEM NOR STICK THEIR ROOTS IN WATER. Unpack them and store them in a cool, dry place until it is time to plant. They should last about 3 weeks kept this way. Do not worry that your plants seem dry. They will "shoot" new roots and new, green tops as soon as they are planted. Be sure to specify on your order when you want your plants to arrive.

Watering

Onions have small, inefficient root system and need moist soil. Keep them constantly well-watered. But when the plants approach maturity their bulbs stop enlarging and begin to form skins. When this happens, withhold further irrigation and hope it does not rain much. Ideally, the bulbs will mature in very dry soil. This helps the skins to cure and makes your bulbs keep better.

Harvesting / Storage

After most of the tops have "gone down," lift the bulbs. It may help to gently loosen them with a shovel first. Allow them to lie in the sun for a day or so, then cure and store them like garlic bulbs or shallots (see the growing directions for these vegetables).

Onions, Topsetting

These very hardy perennials never form bulbs like storage onions do, but instead make delicious scallions.

How to Plant

Topsetting onions are the easiest kind of scallions to grow. Where winters are mild to moderate, you can begin harvesting very early scallions late in the summer of the first year you grow them. Start bulb-lets in the fall.

Plant one 1 deep, 6-10 inches apart. Where winter is severe, store the bulb-lets over the winter and plant them in early spring. After a patch is established, to increase the size of your planting there are several options. Easiest: you can let nature take its course, allowing the plant to "walk." This happens when the weight of the maturing bulb-lets causes a stalk to fall over, resting the bulb-lets on the ground where they'll self-sow.

Another way to propagate them is to divide the root clumps in early spring. And of course, you can intentionally plant some of the bulb-lets that form in your garden.

Harvest

Cut stalks whenever you want green onions. They're so delicious you have to take care not to over-pick the patch. The bulb-lets grown are like little nuts and have a spicy flavor that is improved by pickling.

Maintaining the Patch

Keep free of weeds. If you want to prevent the patch from spreading and want the largest supply of scallions, snap off the bulb-lets as they form. If you want to harvest the bulb-lets, stake and tie the stems so they don't fall over and withhold water from the patch while the bulb-lets are maturing. Once a year, mulch the patch with finished compost to keep it growing well, or in spring dig up the root clumps and divide them.

Peas

Mouthwatering, tender, sweet fresh peas are a culinary delight and one of the very best reasons for having a garden. Fresh peas have an unparalleled sweetness and are among those vegetable that can never be equaled by supermarket produce.

Peas we the first vegetable to be successfully frozen and they are more popular today than any other type of frozen vegetable – but they don't taste as good as the peas we pick from the garden. The reason is quite simple, as soon as the pod is pulled from the plant, the sugar content of the peas within starts to turn to starch.

Historically, peas have been used since the beginning of civilization. Pea seeds were found in Stone Age villages in Switzerland as well as in Egyptian tombs. Of course they were eaten only as a dried vegetable until about 1,000 years ago when the wealthy and fashionable in Britain adopted the continental idea of cooking fresh peas.

We consider them to be the ultimate crop for the overly-busy gardener. Plant them in minutes and come back weeks later to harvest them.

Days to Maturity

Ripening time varies with location and growing season and is influenced by soil and weather conditions. The days to maturity cited here gives the approximate number of days from transplanting until the first peas are ready to pick.

Keep in mind that the maturity date is an estimate of when the first peas will be ready to harvest. Variations in your garden can be due to differences in growing season, soil fertility and other conditions where they were tested.

When to Plant	After last frost
Lighting	Partial Shade
Seed Spacing	4″
Row Spacing	5-6′
Planting Depth	1/2″
Space After Thinning	2′
Days to Germinate	5-10
Days to Maturity	70-100

Which Pea Type For You?

Shell Pea or English Pea: The tradition pea has a tough usually inedible outer pod with delicate, sweet, tender peas inside.

Snow Pea or Chinese Pea: When you think of stir-fry these sweet-tasting, flat, tender pods come to mind. They are best when harvested will the peas inside them are quite small and undeveloped.

Snap Pea: These sweet, crunchy peas have both a delicate edible pod and full-size peas inside with the sweetness of the best garden pea. They are wonder eaten raw, lightly steamed, or stir-fried.

Planting

Peas thrive in cool weather and once germinated will tolerate damp early spring conditions quite well, because of this, tradition holds that you plant peas "as soon as the soil can be worked." However, the cooler the soil, the slower the germination time: from 8 days in 68°F soil, to 36 days in 40°F soil. Let the soil warm up a little so the seeds spend less time in the ground. A good rule of thumb is to plant your peas 3-4 weeks before your last

Peas Continued

average frost date, if the soil is ready.

Similar to other legumes, peas take nitrogen from the air with the aid of soil bacteria, so before planting, we recommend coating the seeds with a powdered legume inoculant to aid this process.

There are two common methods for planting peas, with trellises (support) or without. If planting with support, plant the seeds about 1 inch apart in two narrow bands on both sides of the trellis or fence. Plants do not require thinning, as peas grow much better in thick stand. If planting without support, we recommend wide row planting.

Wide row planting is very easy and it is best used with dwarf varieties. Basically, you'll create a bed at least 18 wide (we usually make our beds 36 inches wide), then plant the peas in rows 6 inches apart. Tamp them down and cover with soil. As the pea plants grow, they cling to each other for support. When planted in wide row bands, peas don't require any weeding as the plants quickly shade out any weed competition, plus the soil stays moist and cool.

Support

All peas benefit from support. It keeps them from rotting on the ground and lets the pods hang straight down, making them less misshapen and easier to pick. Also, when supported, the vines have air circulating freely around them thus they can't be as easily infected by disease. The only time we don't recommend some type of support is if you plant in wide rows. With this technique the peas support themselves.

Many types of wire fencing or nylon netting can be used to train peas. You can also use brush cuttings about 1/4 – 1/2 inch thick at the base. Push the brush solidly into the ground in a dense row and then plant the peas on both sides. Start training the tendrils on the supports when the plants are about 6 inches tall.

Whatever type of support you choose, make sure it's a bit taller than the height your variety will reach and set it up before planting to avoid stepping on small plants later on.

Soil Preparation

Peas thrive in deep, rich, well-drained soil in a sunny location. The plants do best in soil with a pH ranging from 6.0-7.0. We recommend testing your soil in the fall and adjusting the pH range, if needed, at that time. Fall is also a good time for deep spading or double digging (to a depth of 8-12 inches) and for incorporating organic matter into your soil. The addition of compost, leaf mold or peat moss provides organic matter lightens and aerates heavy soils as well as increasing the moisture holding capacity of sandy soils.

In the early spring, rake to break up clods and remove stones. Fertilize as recommended by your soil test results.

Fertilizing

Peas don't require much fertilizer, especially nitrogen, but to help them along, when the seedlings are 2-4 inches tall you can fertilize them with a complete organic fertilizer. Alternatively you can work a 2-3 inch layer of compost into your pea bed. You can also broadcast 1-2 pounds of 5-10-10 fertilizer over each 100 square feet of garden space and work it into the top 2-3 inches of soil (do this a day or two before planting).

Peas Continued

CAUTION: When fertilizing, please keep this in mind – MORE IS NOT BETTER – boosting the amount of fertilizer can damage your plants. An overdose of fertilizer causes plants to grow too rapidly and damage new roots thereby stunting plant growth and significantly setting back your harvest.

Watering

Peas need an evenly moist soil. Never let them dry out. One of the best ways to accomplish this is to put a 2 inch layer of grass clippings around the base of the plants as soon as they germinate.

Weeding

Peas have shallow roots so care must be taken when weeding around the plants. It's best to hand -pull any weeds within a 1-foot radius of the plants. Keep the rows thoroughly weeded until the plants are half -grown, from then on they can out compete the weeds.

Growing Seasons

Short Growing Season Areas: Peas are one of the vegetables that thrive in cooler temperatures. But to get the earliest peas, we recommend creating raised beds the fall before you plant your peas. A raised bed gets soil temperatures of 50F or higher quite early in the spring and this leads to faster seed germination. Peas are also one of the few crops northern gardeners can plant with success during two seasons. Both spring and fall plantings can be successful, however, yields in fall plantings are generally much smaller.

Warm Growing Season Areas: Peas can be grown with the most success if they are planted in wide rows (see PLANTING section above). A 2-3 inch layer of mulch, such as grass clippings, straw or other organic material, can help keep the soil from getting too hot and thus extend your harvest season. We've found that in places like Georgia, your best bet is to plant your peas in mid -January to mid-February, whereas in Phoenix, Arizona the best time to plant is mid-September to November. Contact your local extension agent if you have questions about when to plant in your area.

Harvesting

Pick peas each day during the harvest season to harvest the best quality pods and encourage further production, especially with pole types.

Pods are ready for picking when they are plump, smooth, and bright green pods. Start harvesting at this stage, beginning at the bottom of the plant and working upwards. Use two hands, one to hold the stem and the other to pick off the pod. Avoid any pods that are shriveled or have bulges caused by large peas. Peas that are too big are overly mature and will taste mealy.

The best time to pick is early morning when the pods are crispest. If you can't pick in the morning, the cool of the evening is another good picking time, but the peas don't stay fresh for as long.

Peppers

Peppers, like their relatives the tomatoes, are among the most popular of all garden vegetables. Peppers really jazz up the summer, with their bright, shiny, colorful skins and superb tastes and textures. You can choose from so many different tastes, from sweet to spicy hot. And they're so versatile in the kitchen, delicious raw, sautéed, grilled, roasted, or baked.

All peppers are warm weather fruits, and some varieties are ready as soon as 50 days after transplant.

Soil and Fertilizing

Peppers likes light, loamy, slightly acidic soil with a pH between 6.2 and 6.8. Moderate fertilizer that is not too heavy on nitrogen or too light on calcium is best.

When to Plant	Indoors 8-10 weeks before first frost
Lighting	Full Sun
Seed Spacing	1-2″
Row Spacing	18″
Planting Depth	1″
Space After Thinning	12-18″
Days to Germinate	14
Days to Maturity	50-95

Planting

It's best to sow pepper seeds indoors, 8-10 weeks before last frost, and harden off seedlings before transplanting. Plant two seeds to a pot.
Young pepper plants should be disease free, 6-9 inches tall, sturdy, with a medium to dark stem before you transplant them into your garden. Transplant them in moist, but not wet soil in the evening, or on a cool, cloudy day. It is imperative that the air and soil temperatures be warm for your peppers. Optimum growing temperatures are 70-75°F for sweet peppers, and 70-85°F for hot peppers.

Do NOT plant peppers next to onions, garlic, gladiolus, or potatoes.

Watering

Uniform moisture is key, and it's critical during the fruit set and fruit development growing stages. Peppers need a lot of water; an inch a week, delivered consistently, is usually enough.

Harvesting / Storage

Bell peppers can be harvested at the mature green stage before any color develops. Colored bell peppers are harvested about 10 days after the mature green stage, and can be various shades of yellow, orange, and red. Colored bell peppers are sweeter than mature green bell peppers, and have higher levels of vitamins A and C.

Hot peppers are often harvested at the mature green stage, but in some cases (depending on the type) may be allowed to ripen to yellow, orange, red, and even purple. Sometimes the more toward the red end of the scale, the hotter the pepper is.

Refrigerate the peppers immediately after harvest, as cooling will remove field heat and improve shelf life. Peppers will retain good quality for approximately 14-21 days if stored at 47-55°F.

Potatoes

Preparing the Seed

Open all bags upon arrival and inspect the tubers. If you are unable to plant them immediately, the seed should be stored loosely in a cool, dark place. Humidity is necessary as the seed should not be allowed to dry out. If you put the bags into a refrigerator (these dehydrate the potatoes), leave the tubers in the bags we sent you and put those into a doubled-up supermarket paper sack and seal it well. This will sufficiently slow down moisture loss while permitting the seed to breath adequately. We do not use chemicals to prevent our potatoes from sprouting. So the seed potatoes you order may have already begun to sprout when they arrive. This is okay—in fact some consider it desirable. Please handle them carefully.

When examining them, chitting, cutting or planting, leave the sprouts on. If you break sprouts off you will delay emergence of the vines; and, you will greatly increase the number of vines that finally do emerge from each potato, greatly reducing the ultimate size of the potatoes you will harvest. All tubers the size of a hen's egg (1-3 ounces), may be planted whole. Ones this size are highly desirable. Professional potato growers call these "single drops."

We try to manage our seed potato fields so as to produce as large a proportion of single drops as possible. Larger tubers give the grower a dilemma. As a general rule the larger the seed piece, the larger the crop both in terms of size of individual potatoes and overall yield. On the other hand, the larger the seed pieces used, the more seed it takes to plant a given area.

At minimum, however, each piece should weigh at least 2-4 ounces and must contain two or more strong eyes. Most people cut up larger potatoes into pieces immediately before planting, using a clean, sharp knife. Seed may be allowed to "heal over" for a day prior to planting, but must not be allowed to dry out. Spread the cut pieces out on a table in the shade or one layer deep in shallow boxes. Do not put in direct sunlight; avoid shriveling the seed pieces, which will weaken them.

Growers dust newly-cut pieces with fungicide to guard against scab or reduce the threat of infection by bacteria or fungus. Organic gardeners may use powdered sulfur, placing a teaspoonful or two in a large paper sack and gently tossing the cut potato pieces to cover them with sulfur dust.

Soil Preparation

The ideal potato soil is deep, light and loose, a well-drained but moisture retentive loam. Most potato varieties are very aggressive rooting plants, and are able to take full advantage of such soil. In ideal soil potatoes can make incredible yields. Fortunately, the potato is also very adaptable and will usually produce quite respectably where soil conditions are less than perfect. Because of this, many people who grow their own food on marginal agricultural ground depend on the potato for their very survival.

All soils, be they ideal of too heavy or too light, should be deeply fitted before planting by sub-soiling or double digging and by incorporating organic matter. Humus is important. It lightens and aerates heavy ground while it increases the moisture holding capacity of sandy earth. And humus adds the organic component of fertility that potatoes need to be truly healthy. Potatoes especially thrive one newly plowed pasture land, a circumstance a bit difficult for most vegetables because of the large number of weed seeds. The frequent hoeing used to hill the crop up keeps weeds under control while the high levels of organic matter from the rotting sod keeps the soil light and loose. Potatoes do best in soil with a pH ranging from 5.2-6.8. Alkaline soil will tend to make many varieties get scabby.

Potatoes Continued

Potatoes also respond to calcium, but newly-applied agricultural lime can induce scab so if lime is needed, far better if it was added the previous year. On soils already above 6.0 we recommend using a little gypsum to supply calcium while leaving the pH just about unchanged. Gypsum applied at 1 ton/acre (that's 5 pounds per 100 square feet) provides all needed calcium. As far as NPK goes, potatoes need well-balanced nutrition. Properly made compost at 5-10 tons per acre (25-50 pounds per 100 square feet) mainly dug into the rows below the seed is generally sufficient to produce a fine crop, while also supplying all the organic matter most soils need. If the compost is not "strong," we recommend supplementing it with fertilizer, but not too much.

Potatoes given too much nitrogen grow lots of leafy vines but make few tubers. Too much potassium and your tubers may contain less protein. Organic gardeners may use any kind of seed meal cottonseed, soy, linseed, canola, etc.), dug in with compost at a rate of about 1-2 gallons per 100 row feet. Alfalfa meal or chicken manure compost also works fine used at twice that rate.

Chitting or Pre-Sprouting

The practice of greening and pre-sprouting seed potatoes before planting them out encourages early growth and hastens the development of marketable tubers. The method is simple: spread the seed tubers in open -top crates, boxes or flats, one layer deep with the "seed end" uppermost. (If you'll closely observe a seed potato, you'll notice that one end was attached to the plant, the other end has a larger number of eyes from which the sprouts emerge. This end with the eye cluster is called the seed end.)

The flats are kept in a warm place (70°F.) w here light levels are medium in intensity (bright shade). The warmth stimulates the development of strong sprouts from the bud eye clusters, which in the presence of light, remain stubby and so are not easily broken off. Usually seed potatoes are greened up starting a week or two before planting. Do not cut the seed before greening it up. It will dry out. Cut it just before planting.

Planting

Seed potatoes can rot without sprouting in cold, waterlogged soil, so planting extremely early can be risky. Optimum soil temperature for good growth ranges from 55°F to 70°F. A small planting of the earliest early potatoes may be attempted by planting 6-8 weeks before the last frost date.

If a late frost burns the vines back to ground level the tubers will make more sprouts, but each time this setback happens the final yield gets later and smaller. Your main crop should be sown so that there is virtually no risk of frost blackening the emerging vines.

The width between rows and overall plant spacing is determined by the size of your garden, your method of cultivation and the amount of irrigation you have available (or wish to use). Farmers and market gardeners need 36-42 inches between rows to permit efficient cultivation and hilling. Gardeners can get by with as little as 2 feet between rows.

Where water is short or irrigation will not be used and soil is open and loose so plants can take advantage of this much rooting space, row spacing can be increased to as much as 5 feet and the individual seed pieces separated as much as 18 inches apart, giving the plants a large area in which to forage for moisture. Of course, with wide spacing like this combined with the effects of moisture stress, yields will be lower. Whatever your row spacing, dig a shallow trench about 6-8 inches deep. Plant the seed pieces 10-14 inches apart in this trench. Using a rake, cover the seed with 3-4 inches of soil-do not fill the trench completely.

Potatoes Continued

Watering

In most parts of the United States, potatoes can be grown without irrigation if the soil is deep and open, where there is no hardpan that restricts root penetration, and the soil is not composed entirely of coarse sand or too gravelly. In fact, there are some definite nutritional and quality advantages to accepting the significantly lowered yield that happens when potatoes don't receive all the water they could use.

Simply stated, un-irrigated potatoes are less watery and taste better. The skins are also tougher so the tubers store better. There is some evidence that potatoes grown this way have a higher protein content as well. However, if irrigation water is scarce or not available the potatoes must be given more "elbow room," so they can forage for their water without having to compete with other potato plants-and very importantly, the weeds must all be eliminated so they also don't compete for soil moisture.

Fertilizing

After emergence and until blooming ends, we highly recommend foliar spraying every two weeks with fish emulsion and/or a good liquid seaweed extract like Maxi-crop. You can't beat foliar sprays for ease of application, and the plants really respond with a burst of vine growth that will result in a higher yield at the end. Spray in the morning while it's still cool and the dew lingers on the leaves. This way all the fertilizer is absorbed. The best time to make the first application is the day before you hill up the vines for the first time. Once the vines are in full bloom, they stop making much new vegetative growth and begin to form tubers. Additional fertilization at this stage is virtually pointless and may hinder the flavor.

Hilling

Hilling is crucial to creating a place for potatoes to develop a large size and abundantly. Sprouts will emerge in about two weeks, depending on the soil temperature. When the stems are about 8 inches high, gently hill the vines up with soil scraped from both sides of the row with a hoe.

Doing this simultaneously weeds the row. Leave about half of the vine exposed. Hilling puts the root system deeper where the soil is cooler while the just scraped -up soil creates a light fluffy medium for the tubers to develop into.

All tubers will form between the seed piece and the surface of the soil. Another hilling will be needed in another 2-3 weeks and yet another as well, 2 weeks after the second. On subsequent hilling, add only an inch or two of soil to the hill, but make sure there is enough soil atop the forming potatoes that they don't push out of the hill and get exposed to light (or they'll turn green). But if you hill up too much soil, you'll cover too many leaves and reduce your final yield.

Harvesting

Normally, seven or eight weeks after planting, the earliest varieties are blossoming. This signifies that early potatoes may be ready, so gently poke into a potato hill by hand to see what you can find while making as little disturbance as possible. You may either "rob" a few plants of a potato, or simply harvest an entire plant from the end of the row.

"Rob" gently to avoid injuring growing roots and stressing the plant. The main crop. Later varieties are usually grown for winter storage. The ideal time to harvest is when the vines are dead. It is best to wait until heavy frosts kill the tops off or, if your tubers are fully-sized up but no frost is in sight, you can mow the tops or cut them off

Potatoes Continued

by hand with a sickle. But if you can wait for the tops to die back naturally, your harvest will be a little bigger and your potatoes just a tad richer. Drier soil is definitely an advantage when harvesting; the tubers come up a lot cleaner and with much less effort. After the tops are dead, rest the tubers in the ground, undisturbed for two weeks to "cure," while the skins toughen up, protecting the tubers from scuffing and bruising during harvest and storage. Minor injuries in the skin may heal if allowed to dry.

It is better to harvest in the cool morning hours. You want to chill your tubers down as fast as reasonably possible and if they start out cool it will be much easier. If hand digging, place your fork outside the hill at first and lift the hill from outside so as to avoid stabbing a potato. If the soil is wet, let them air-dry on the surface for a few hours before gathering them. If the weather is unsettled and you still must harvest, spread the potatoes out under cover and let them air-dry before storing. Then "field-grade" your harvest. Separate out and discard (or set aside to eat immediately) any blemished, scabby, misshapen, or injured tubers. Do not put cut or damaged tubers (those injured during harvest) into a sack of good ones; they will rot and rot other potatoes with them.

Potato Troubles

Avoiding Pests and Diseases: An ounce of prevention is worth a pound of cure! Here are some tips to help you avoid the worst potato diseases and pests. Soil is everything! Build and maintain a healthy, well-balanced soil and your plants will naturally resist disease and damage from predatory insects. If you're uncertain as to how to do this, we sell a couple of fine books on the subject. Scab. Avoid un-composted animal manures, alkaline soil, and water-logging on potato ground to avoid scab. Where scab has been a problem, try acidifying your soil pH by incorporating small amounts of elemental sulfur into the rows several weeks before planting. Disease. Don't grow potatoes in the same ground more than once in three years. Many diseases, like early or late blight and verticulum wilt are soil borne. Insect pest populations can also accumulate in a spot. Other members of the nightshade family (tomatoes, peppers, eggplant) should not precede nor follow potatoes.

Insects: The most basic rule to avoid insect problems are to have vigorously growing, healthy vines. Plants putting on lots of leaf rapidly can generally withstand some predation without a significant loss of yield. We avoid planting too early.

Leaf-eating insects can become a much more serious problem once vine growth has stopped and tubers are forming. The tubers store the food made by the leaves; if too many leaves are lost the tubers can't develop properly. The Colorado Potato Beetle is the most widespread and destructive potato pest. Both adults and larvae feed on leaves and stems, sometimes defoliating entire plants. Handpicking the beetles off the plants is fine control in a small garden, if you catch the problem early. Drop the beetles into a container and then smash them all at once. Check also for small yellow eggs, in clusters, on the undersides of leaves and crush these immediately. Beetle eggs over-winter in the soil, especially at the edges of the garden.

Rotation of the farm potato crop is essential, but rotation in a backyard won't do much good for this mobile pest; you have to move the potato patch more than just a few feet.

Bacillis thuringienses (Bt.) var. San Diego, is an effective botanical control, but unfortunately, only for the larvae. The adults are not harmed at all. Hours after the "worm" eats a bit of treated leaf, it becomes so sick it can't eat again and dies within a day or two. Then the bacteria multiply within the larvae's decomposing body and are later released into the environmental background to kill still other beetle larvae.

Even growers with small gardens should consider Bt. because this bacteria, once established, persists in the area for years and continues to significantly reduce the number of those insects who succumb to it. And if Bt. is

Potatoes Continued

sprayed frequently it can virtually eliminate the problem. Start with spraying as soon as there is anything in the garden for the beetles to eat and spray every 10 days to two weeks. That way no larvae get a chance to become adults and your problem may "peter out" before the potato vines are significantly damaged. Bt. is a bacteria not significantly different than the ones that make yogurt. Bt. is entirely nontoxic to humans and other animals and harmless to most insects as well; you can immediately eat food sprayed with it. If adult beetles are causing too much trouble, Bt. will not help until the next cycle has come around. For adults, the organic gardener can use 5% Rotenone dust or a Pyrethrum spray.

Flea beetles can also make so many pinholes in leaves that the overall yield suffers greatly. The health of the vines has a great deal to do with how much interest flea beetles have in a plant. So the best prevention is total soil fertility. Sometimes spraying fertilizer like fish emulsion and/or liquid seaweed can lessen the interest flea beetles may have in a potato patch. Rotenone and/or Pyrethrum controls flea beetles, too. If you are having flea beetle problems, you should consider improving your soil's fertility next year.

Storage

Potatoes keep best in the dark at 36° to 40°F, at high enough humidity that they don't dry out, and given enough air circulation that they can respire (don't forget, they're alive). Light and/or warmth promote sprouting and will also turn the potatoes green. But, cold potatoes bruise easily, so handle them gently when moving them around in storage. We recommend burlap sacks, slotted crates, or baskets.

Southern Grown Potatoes

Early Spring Planting: Spring comes to the Deep South (Zones 8, 9, 10) when it is frequently too stormy in the North to ship your seeds without a high likelihood of them freezing in transit. To get seed potatoes securely you should order in October or November. Store the seed in your refrigerator (there are instructions on the preceding pages) until mid -January. Then bring the seed potatoes into the warmth and light and pre-sprout (chit) them for 2-4 weeks. Plant when conditions are favorable, sometime in February to early March, depending on your location. If you are uncertain when to plant or which varieties grow best at this time of year, ask a neighbor, the Extension Service.

Fall-Planted Potatoes: In zones 8-10, over wintering gets the earliest of the earlies. And if you have an extra old refrigerator, you can fill it up after harvest and hold your harvest through the summer until the fall crop. Here's what to do. Order some seed now for delivery next September. These newly dug seed potatoes don't sprout easily. First, chill them; put the tubers in a paper bag and place it in the refrigerator for 2-4 weeks. Then follow the directions for "greening" or "chitting" them. They will probably sprout in 2-4 weeks. Another way to induce sprouting is by putting apples, bananas, or onions in a paper bag with the tubers and placing the bag in a warm room (70 degrees F.). Ethylene gas given off from the fruits will initiate sprouting.

Potatoes that are chilled for a month to six weeks will respond much more rapidly. You can also treat with Gerablic Acid. Plant your just sprouting potatoes from October through November. Choose a site that allows good drainage where winter rains may be heavy. By January, your potatoes could be emerging. By March, the vines may be two feet tall! Of course, weather will greatly effect emergence and growth. Be sure to provide protection from frost when it threatens. Dig new potatoes after blossoming. Harvest the rest when the vines have browned off. Save some seed in your refrigerator for a late-summer planting and fall harvest.

Potatoes Continued

Alternative Planting Methods

Mulching: If your soil is shallow, rocky or contains so much clay that the forming tubers can't push it aside as they try to swell up, or, if you grow potatoes where the summer's heat is intense, or if you have problems with potato scab in your soil, growing in mulch may be your solution. Prepare your seed bed as deeply as possible and make it fertile, just as you would for growing the potatoes in soil. But instead of making a trench for the seed pieces, plant them on the surface of just below it. Loosely shake mulch over the bed, 6-10 inches deep. The very best mulch to use is loose, seed-free grain straw, Seed- free hay that has been fluffed up, leaves and/or well-dried grass clippings can also be used. As the plants grow, continue to add more loose mulch as though you were hilling up the plants. Be sure to keep the tubers well-covered at all times.

The result is excellent weed control, a continuous supply of moisture and reduced stress from heat. At harvest time, pull back the mulch. Your nest of potatoes should be clean, uniform and easy to gather.

The Cage Method: Grow a few potato plants, each or in their own wooden box, crib, barrel or wire cage. The container should be about 18×18 inches at the base, about 24-30 inches tall, and able to be gradually filled with soft soil or mulch as the vines grow. Set each container atop a well-prepared fertile soil. Plant one strong seed piece and cover lightly with 4 inches of soil. As the vines grow, gradually fill the container with mellow compost, mulch or soil, but always make sure you don't cover more than one-third of the vine's new growth. With some varieties, the underground stolons which produce potato tubers keep on forming new ones for some time. In containers the yield may be increased 200-3000 percent compared with open-field culture. This is a great way to grow a lot of potatoes in a very limited space. We recommend doing this with Yellow Finn, Indian Pit, Red Pontiac, or the fingerling types. Watering requirements will be greater however, so check the cages or containers frequently in warm weather.

The Potato Box: Allows you to grow 100 pounds of potatoes in only 4 square feet.

Materials:
6 - 2x6″ boards, 8′ long
1 - 2x2″ board, 12′ long
96 - 2 1/2″ wood screws

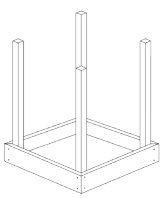
Pine, cedar, or redwood are recommended to resist rot.

1. Cut the 2x2 into 4 lengths of 33″.

2. Cut the 2x6 boards into 12 lengths of 21″ and 12 lengths of 24″.

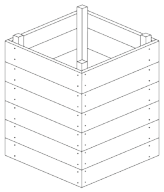
3. Pre-drill the screw holes in the 2x6 boards and attached the bottom row on the 2x2's.

4. Place over prepared soil and fill with soft soil or mulch, planting potatoes 4″ deep.



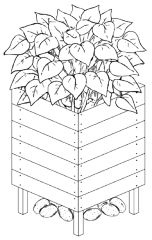
5. When the vines are above 12″ above the soil, add another board and fill with dirt, being careful not to cover more than 1/3 of the plant.

5a. Repeat this process until the box is complete.



6. To harvest your potatoes, remove the screws from the bottom board and carefully reach in for the potatoes. Replace the soil and boards.

6a. Next time you need potatoes, remove the second board and "rob" spuds from that level.



Potatoes, Pre-Nuclear

Remember your pre-nuclear potatoes are “sleeping” and their dormancy needs to broken. Follow these steps to help ensure healthy growth and harvest of your pre-nuclear potatoes.

Step 1: Place them in in-direct sunlight at room temperature for 1-3 weeks. If your potatoes do not sprout within 3 weeks place them in your refrigerator, in an open container for 3-4 days and repeat step one.

Step 2: As the sprouts reach a length of 1/4” – 1/2” very lightly cover them with soil in the desired bed, while not covering the sprout. Lightly water the potatoes.

Step 3: As they grow; gently cover or “hill” the potato plants leaving several leaves exposed and continue lightly to water. Repeat hilling of your pre-nuclears until you achieve a normal sized hill and watch your potato plants grow tall and healthy.

Pumpkins

Pumpkins are warm-season cucurbits grown for fall harvest and ornamental or culinary use. They require full sun, warm soil, and ample space to vine in order to produce large, well-shaped fruit.

Soil and Fertilizing

Pumpkins grow best in well-drained, fertile soil rich in organic matter with a pH between 6.0 and 6.8. Incorporate compost or well-aged manure prior to planting. Pumpkins are heavy feeders and benefit from balanced fertility early, followed by higher phosphorus and potassium as vines flower and fruit develop.

When to Plant	After last frost
Lighting	Partial Shade
Seed Spacing	3″
Row Spacing	4-5′
Planting Depth	1″
Space After Thinning	18″
Days to Germinate	4-7
Days to Maturity	90-120

Planting

Direct sow pumpkin seeds outdoors after all danger of frost has passed and soil temperatures reach at least 65°F. Sow seeds 1 inch deep, planting in rows or hills to improve drainage and soil warmth. Thin seedlings to 24-36 inches apart once established. Pumpkins may also be started indoors 2–3 weeks early, but transplant carefully to avoid root disturbance.

Support

Pumpkins are vigorous, sprawling vines that require significant space. Smaller varieties may be trained onto sturdy trellises with proper fruit support, while larger types are best grown on the ground. Allow vines to spread freely and avoid moving developing fruit once set.

Watering

Provide consistent, deep watering throughout the growing season, especially during flowering and fruit set. Aim for 1–2 inches of water per week. Water at the base of plants to reduce disease pressure and avoid wet foliage. Reduce watering slightly as pumpkins mature to improve rind hardness.

Pests and Diseases

Common pests include squash bugs, cucumber beetles, vine borers, and aphids. Diseases such as powdery mildew and downy mildew may occur in humid conditions. Use crop rotation, proper spacing, good airflow, and timely pest monitoring to minimize issues.

Harvesting / Storage

Pumpkins are ready to harvest when rinds are fully colored, hard, and resistant to puncture, and stems begin to dry. Harvest before hard frost, cutting fruit from the vine with several inches of stem attached. Cure pumpkins in a warm, dry area for 10–14 days, then store in a cool, dry location for long-term keeping.

Quinoa

Native to the Andes Mountains, quinoa (pronounced “keen wah”) has been grown for over 5,000 years. The name, derived from “Quinua,” means “Mother Grain” in the Inca language.

Quinoa is a cool season annual in the same botanical family as beets and spinach. A highly nutritious alternative to wheat, barley, and corn, it has become very popular in the United States in recent years.

Soil and Fertilizing

Quinoa does best in sandy, well-drained soil with an highly acidic pH of 4.8—a relic of its origins as a highland crop. Provide it with level, well-drained seed beds to keep it from becoming waterlogged. Small quinoa crops grow especially well in raised beds; this is a good option for avoiding the waterlogging issue.

When to Plant	As soon as soil can be worked
Lighting	Full Sun
Seed Spacing	1″
Row Spacing	14-24″
Planting Depth	1/2-1″
Space After Thinning	3-4″
Days to Germinate	2-4
Days to Maturity	90-110

Planting

Plant the seeds directly in the ground or in your raised beds in the spring, as soon as the soil has thawed completely and can be worked. Cover the seeds with ½-1 inch of soil. The plants will germinate quickly, but they grow slowly before reaching their maximum height of 1 1/2 to 6 1/2 feet tall. The more room they have to branch out, the better. Keep up with weed control, since the plants have a long growing period and don’t need the competition. Your quinoa plants may range in color from white to yellow, pink, red, purple, or black.

Watering

Because it develops a deep tap-root and a highly branched root system, quinoa is somewhat drought resistant. However, it does need to be watered regularly until the seeds start to mature. At that point, stop watering and allow the plants to continue growing.

Harvesting / Storage

Quinoa produces a large, sorghum-like seed head. To determine maturity, check to see that the seed can be just barely dented with a fingernail. If the plants have dried to a pale yellow or red or have dropped their leaves, the quinoa is ready for harvest. Cut off the seed heads and lay them out on a tarp or cloth to dry, then screen out the seeds.

Mandatory Pre-Storage Step

Quinoa seeds are covered with a bitter substance called saponin that you must remove before storing and especially before eating. To remove the saponin, soak the seeds in water for a while, pouring off the water and replacing it with fresh water several times, or put them in sacks or sturdy pillowcases and run them through a few washing machine cycles. Use water only, no detergent! Then lay them out to dry completely before storing.

Rhubarb

Rhubarb is a cold-hardy perennial grown for its thick, tart stalks that are prized in pies, sauces, and preserves. One of the earliest crops of spring, rhubarb thrives in cooler climates and becomes more productive each year once established.

When to Plant	As soon as soil can be worked
Lighting	Partial Shade
Seed Spacing	3-4′
Row Spacing	3-4′
Planting Depth	Flush with crown
Space After Thinning	Divide every 5-15 years
Days to Germinate	N/A
Days to Maturity	90

When you receive your roots

Replant the rhubarb as soon as possible. The roots must not be allowed to dry out prior to planting. If the rhubarb can't be planted immediately, place the clumps in a plastic bag and store them in a cool, dark location. This temporary storage should be fine for a few days.

Preparing the Soil

Rhubarb is easy to grow. It performs best in full sun. Avoid shady sites near large trees or shrubs. Rhubarb also requires fertile, well-drained soils that are high in organic matter. Sandy and clay soils can be improved by incorporating large quantities of compost or other forms of organic matter into the soil before planting.

Planting

Plant rhubarb sections upright with buds 1–2 inches below the soil surface, spacing plants about 3 feet apart. Water thoroughly after planting and continue regular watering through the first growing season. During dry periods, deep watering every 7–10 days is sufficient. Do not harvest stalks the first year; allow plants to establish. Limited harvesting may begin in the second year, with a four-week harvest window in the third year and up to 8–10 weeks in subsequent years.

Fertilizing, Watering, and Maintenance

Flowering is often caused by stress from drought, heat, poor soil, or plant age. Prevent flowering by maintaining good growing conditions. Apply ½ cup of an all-purpose fertilizer (such as 10-10-10) around each plant in early spring and stop harvesting by mid-June. Water weekly during prolonged dry periods. Divide large or old plants in early spring or late summer, ensuring each division has 2–3 buds and a healthy portion of roots. Rhubarb may also be transplanted in early fall; mulch fall plantings with several inches of straw in mid-November.

Harvesting

On young plants, pick stalks only in the spring and allow them to grow unpicked all summer or growth will be delayed the following spring. You can harvest sparingly on vigorous, well-established plants throughout the summer. Any leaves remaining at the end of the season can be pulled just before the first fall frost.

Rutabaga

Rutabagas, also called “Swedes,” are a cool-season root crop that produce larger, slightly sweeter roots than turnips. They are best grown for autumn harvests and improved flavor after light frosts.

When to Plant	Early spring / late summer
Lighting	Full Sun
Seed Spacing	1/2″
Row Spacing	1′
Planting Depth	1/2″
Space After Thinning	6-8″
Days to Germinate	3-14
Days to Maturity	80-90

Soil and Fertilizing

Rutabagas prefer fertile, deep, well-drained soil with a pH around 6.0-6.8. Work compost or organic matter into the soil before planting to support large, uniform root development.

Planting

Direct-sow seeds in early spring for a summer crop or late summer for fall harvest. Sow seeds 1/2 inch deep, with rows 18-24 inches apart. Thin seedlings to 6-8 inches apart after true leaves emerge to allow ample space for roots to expand.

Watering

Keep soil consistently moist through active growth, especially as roots are forming. Avoid drought stress, which can lead to woody texture or poor shape. Mulching helps maintain soil moisture and moderate temperatures.

Pests and Diseases

Rutabagas are prone to cabbage pests and diseases similar to other brassicas, including flea beetles and alternaria leaf spot. Rotate crops and avoid planting where other brassicas have recently grown.

Harvesting / Storage

Harvest rutabagas when roots reach 2 1/2-4 inches in diameter, and flavor is improved by light frost. Gently dig roots with a fork, trim tops, and store in a cool, moist location such as a refrigerator or root cellar. Both greens and roots can be enjoyed, but roots store longer.

Shallots

Shallots, multiplier onions and potato onions are closely related members of the same family. As in any family, the individuals possess different qualities but are grown much the same.

When to Plant

It is always best to plant in the fall because fall-plantings yield twice as much. Protected by a good mulch and snow cover, these onions, have survived minus 25°F. However, if your winters are unusually severe, you might test-plant a few in fall the first time you grow them and save the rest to plant in spring. The exact time to plant must be learned by experience. What you want is for the bulbs to establish a strong root system, but not to make much, if any, tender top growth before the ground freezes. Normally, planting 4-6 weeks before hard winter comes is about right. The top growth may appear, make a few inches of growth and die back during winter, but if the bulb hasn't had its food reserves sucked down too hard by making leaves in fall, it will still retain enough vigor to burst into rapid growth as soon as the soil warms up.

Soil Preparation

All members of the onion family grow best in light loam that is rich in organic matter and plant nutrients. Large bulbing onions are especially fussy in this regard and rarely do well when grown under less than ideal conditions. The smaller onions like shallots, multipliers and potato onions yield reasonably well under many conditions, just so long as the soil is well-fertilized, well-drained and kept moist. However, waterlogged soil will make the bulbs rot or adversely affect their appearance and quality. In infertile soil the bulbs will be very small.

Growing

If you want really large bulbs, side dress the plants when growth resumes in spring. Organic gardeners can use chicken manure or any kind of seed-meal (cottonseed meal, canola meal, linseed, soybean, etc.) at a rate of about 1/2 to 1 gallon per 50 row feet. When the bulbing begins, any mulch or soil covering the bulbs should be pulled back so the bulbs form on the surface of the soil and dry down.

Harvest / Storage

The tops of these species often make very tasty scallions, especially potato onions. However, if you snip off too many sprouts, there will be fewer and smaller bulbs. It is important that the bulbs form tough protective skins. To accomplish this the plants must mature in dry soil. So as the bulbs are forming you should stop watering them. The time to harvest is when most of the tops have browned off and fallen over. Loosen the soil first with a spading fork and then gently lift the bulbs. Their skins have not hardened yet so it is important to avoid bruising or tearing the skin. The bulbs, with their tops still attached should be air-dried for 2-3 weeks until the tops have completely shriveled. Then cut the tops off with sharp scissors or pruning shears—about 1 inch above the bulb. Spread the bulbs out on wire racks in the shade or in a garage to cure for 2-3 months. By then it will be time to replant or store them for the winter (those you haven't eaten yet).

Like all onion bulbs, shallots, multiplier onions and potato onions need cool, dry storage with lots of air circulation. They are best hung in mesh sacks at a temperature of about 40°F, but they will keep quite well at 50°F if they have been properly cured and are not tightly packed.

Spinach

Spinach is one of the healthiest green vegetables you can grow. It's packed with iron, Vitamin A, Vitamin K, various B-complex vitamins and a variety of other nutrients, all in a leaf that tastes delicious in sandwiches, salads, and as a cooked side. Spinach loves cool weather, making it a garden favorite for early spring and late fall.

Soil and Fertilizing

Spinach favors loamy, fertile soil with a loose texture and a high percentage of organic matter (compost works well), with a pH of 5.5-6.8.

When to Plant	Early spring / fall before first frost
Lighting	Partial Shade
Seed Spacing	1″
Row Spacing	12-18″
Planting Depth	1/4″
Space After Thinning	3″
Days to Germinate	7-21
Days to Maturity	43-60

Planting

Air temperatures of 50-70°F, with soil temperatures between 35° and 45°F, make the best conditions for spinach. If the temperature rises above 80ºF or the days get longer than 14 hours, spinach will bolt (flower) and become bitter.

Sow spinach seeds directly in the garden, as spinach doesn't take to transplanting. You can still get an early start in spring, however, by planting up to eight weeks before the last frost. Late September to mid-October are the best times for fall sowing, possibly even a bit later in the deep South.

A place where the plants are shaded during the hottest part of the day is ideal. If you grow spinach in containers, be sure to move them into the shade as necessary.

When you thin your spinach seedlings, keep the culled plants. The tender leaves are tasty in salads.

Watering

Give your plants about one inch of water once a week if you don't get enough rain. Be sure not to overwater, or you may run into problems with disease. A layer of mulch around the plants will help them conserve water.

Harvesting / Storage

Mature spinach presents a rosette of 5-6 leaves. Unlike plants like collards or turnips, however, the leaves will not grow back when you pick them, so harvest the entire plant at once.

Strawberries

Strawberries are a sweet treat in the garden, and it's no surprise that they're the most widely grown fruit in the world. Strawberries thrive from tropical to subarctic climates, are easy to grow, and tolerate a wide range of soil types. Everbearing varieties (like the ones we carry) typically bear fruit in summer and fall.

Soil and Fertilizing

Strawberries like deep, well-drained sandy loams. They don't tolerate extremes in pH well, with the ideal pH being slightly acidic at 5.8-6.2. About 6 weeks after planting, apply two pounds of 10-10-10 fertilizer per 100 square feet. Sprinkle the fertilizer evenly over the growing area, avoiding direct contact with the foliage. Add two pounds again after renovating in July.

When to Plant	Early spring
Lighting	Full Sun
Seed Spacing	12-18″
Row Spacing	3-4′
Planting Depth	Crown at soil level
Space After Thinning	N/A
Days to Germinate	N/A
Days to Maturity	365+

Planting

Everbearing strawberries can be grown in-ground, and also in containers and raised beds.

First Year

Before transplanting, soak the roots for two hours to rehydrate them. Dig a hole deep enough so the roots extend vertically and are not bent. Cover the plants with soil just below the crown (where the plant top meets the roots). The crown should be at soil surface, not buried. Avoid planting strawberries in an area where they were recently grown, or where crops in the tomato family (including eggplants, potatoes and peppers) have grown, as they may carry a root fungus.

Next Few Years

If you carefully cover your strawberry plants with straw or mulch, they will overwinter and come back the next year in most climates. You can also start fresh with new, disease-free planting stock. If growing in containers, replace the growth medium with fresh sterile medium, and replant with new plants.

Thinning

Remove all blossoms 6-8 weeks after planting to improve yields. Clip off runners to keep the plants from getting too crowded.

Watering

Strawberries are shallow rooted. Water often, but keep the plants well-drained.

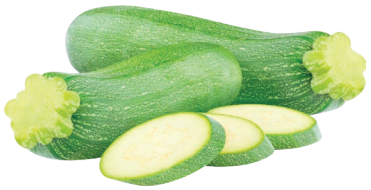
Harvesting

To pick strawberries, cradle the fruit in your hand, pinch the stem between thumb and forefinger, and pull. Pick the caps along with the fruit. "Renovate" immediately after the harvest to reduce disease. Stimulate new growth by mowing or clipping the plants to a height of 3 inches, and immediately remove the clippings. You can expect to get 3-5 years of harvests, if the area is kept weed- and disease-free, and if you renovate every year.

Summer Squash

Summer squash is a fast-growing, warm-season crop grown for its tender, immature fruit. Common types include zucchini and yellow squash, which thrive in warm soil, full sun, and consistent moisture.

When to Plant	After last frost
Lighting	Partial Shade
Seed Spacing	3″
Row Spacing	4-5′
Planting Depth	1″
Space After Thinning	18″
Days to Germinate	4-7
Days to Maturity	42-60



Soil and Fertilizing

Summer squash grows best in well-drained, fertile soil rich in organic matter with a pH between 6.0 and 6.8. Work compost or aged manure into the soil before planting. Avoid excessive nitrogen once plants begin flowering, as it encourages leafy growth over fruit production.

Planting

Direct sow seeds outdoors after all danger of frost has passed and soil temperatures reach at least 60–65°F. Sow seeds 1 inch deep in rows or hills, then thin seedlings to 18–24 inches apart. Summer squash can also be started indoors 2–3 weeks early, but transplants should be handled carefully to avoid root disturbance.

Watering

Provide consistent, deep watering throughout the growing season, especially during flowering and fruit development. Aim for about 1-2 inches of water per week. Water at the base of plants and avoid overhead watering to help prevent disease.

Pests and Diseases

Common pests include squash bugs, cucumber beetles, aphids, and vine borers. Diseases such as powdery mildew may occur later in the season. Practice crop rotation, monitor plants regularly, and remove affected foliage as needed.

Harvesting / Storage

Harvest summer squash when fruits are young and tender, typically 6-8 inches long for zucchini and slightly smaller for yellow squash. Frequent harvesting encourages continued production. Summer squash is best used fresh and can be stored short-term in the refrigerator.

Sweet Potatoes

Sweet potatoes are a warm-season crop grown for their sweet, nutritious tubers and vigorous vines. They thrive in heat, well-drained soil, and a long frost-free season, making them a reliable choice for summer growing and fall harvest.

Growing

Sweet Potatoes can be grown successfully in all 50 states. They do best with ample sun and heat and need at least 90 days frost free in most climates. The amount of heat units determine time to maturity, so if you live in a climate where the heat of summer means daytime temperatures 85 degrees or higher, you can grow sweet potatoes. We do recommend black plastic mulch for Northern growers or greenhouse grown.

When to Plant	May-June for northern gardeners
Lighting	Full Sun
Seed Spacing	10-18″
Row Spacing	24-36″
Planting Depth	Several inches below nodules
Space After Thinning	N/A
Days to Germinate	N/A
Days to Maturity	85-120

Sweet potatoes are grown from “slips,” sprouts that are cut from the “mother” sweet potato in a greenhouse production bed. Sweet Potato Slips will arrive wilted despite having been cut and gently wrapped in moist paper before being mailed promptly to your door. Slips will rarely have roots developed at this time. This is normal! Green stems will grow into lush vines. We recommend planting your slips right away for best results. If you can’t plant immediately, unwrap the slips and spritz them with water to keep them moist. We do not recommend putting them in a glass of water.

Plant slips 10-18″ apart in rows spaced 24-36″. Slips can be placed in raised hills or beds. Place slips several inches deep in soil- this should cover several root nodules. Keep soil moist for the first several weeks after planting. Keep on top of weeds early, and eventually the vines of the plant will spread and out-compete most weeds. Sweet potatoes are beautiful plants that vine prolifically and sometimes show striking flowers similar to those of morning glory, to which they are related.

Harvesting

Water deeply and consistently throughout the season, tapering off a bit towards harvest time. Sweet potatoes should be harvested before or soon after the first frost in the fall. Each plant should produce approximately 2-4 pounds of sweet potatoes that can be hand dug with a shovel or fork.

Cure harvested roots for 5 days in a hot and humid environment as close to 85°F and 95% humidity as you can provide. This can be done in a shaded area of a greenhouse or in a room with a humidifier. If these conditions are not available, layer roots in newspaper in closed boxes for several weeks. Cured roots can be stored for 6-10 months at 55-65°F.

Swiss Chard

Also known as silverbeet, Swiss chard is a member of the beet family grown for its edible greens, which can be used in salads or even fried. Its tender leaves taste like spinach, and can be harvested continuously throughout the season.

When to Plant	Spring or fall where winters are mild
Lighting	Partial Shade
Seed Spacing	1″
Row Spacing	18″
Planting Depth	1/2″
Space After Thinning	8-12″
Days to Germinate	7-10
Days to Maturity	85

Soil and Fertilizing

Plant after the last spring frost. The soil must be well-drained, and enriched with vegetable food. Feed every four weeks for best results.

Watering

Consistent moisture is important to Swiss chard, especially as the plants grow larger. Water every day.

Harvesting

Break or cut the outer leaves off at the base when they're 6-8 inches wide. Pick and discard old or tough leaves and flower stalks. Avoid damaging the growing point in the center of the plant. If you plan to harvest whole plants, make succession plantings through late summer, so you won't run out.

Special Notes

Swiss chard is a mid-summer green that grows well in heat, but will also last through fall's first frosts.

Tomatoes

It's a phenomenon that happens every summer across the United States – gardeners wait eagerly to savor the first ripe tomato of the season. For tomato lovers, juiciness, tender meaty interiors, little or no inner cores, and above all, that full, rich tomato flavor are best had by tending a crop at home.

Number one when it comes to popularity, tomatoes are grown by almost every gardener. Even those who do not have a garden will grow tomatoes, planting in containers on patios and decks or along a fence or in any sunny spot available. You don't need a big backyard to grow a crop of tomatoes.

But why bother? Because the flavor of a homegrown tomato so far surpasses anything you could hope to buy in a store that it's worth the time and the little effort and space needed to "grow your own".

Historically speaking, the tomato is a native of South America in the Peru/Ecuador area. It was brought from Mexico to Europe in 1523 and presented as a novelty known as the "pomme d'amour" or "love apple".

Culinary speaking, tomatoes are a fairly current event. The nutritious, juicy, tasty red fruit was not even cultivated as a food crop until well into the 19th century. People used to believe they were poisonous because of their resemblance to Nightshade (a highly poisonous relative) and because animals would not go near the plants. Many important garden plants also belong to this family including potatoes, peppers, eggplants and even petunias!

Today tomatoes are the most popular home-grown vegetable in America and the gardener's supreme delight. They are a staple of many cuisines and offer the ultimate in versatility, whether used raw or cooked.

When to Start Seeds

Start seeds 6-8 weeks before the last average frost date in your area. Timing determines the quality of your seedlings. Seedlings started too early will become leggy and may become stunted in your containers and will have a difficult time adjusting to conditions in the garden. Seedlings started too late will delay your harvest.

When to Plant	Indoors 6-8 weeks before last frost
Lighting	Full Sun
Seed Spacing	6-8″
Row Spacing	36″
Planting Depth	1/4″
Space After Thinning	12-24″
Days to Germinate	5-14
Days to Maturity	50-90

Choosing Varieties for Your Climate

To grow tomatoes successfully you should know two very important dates, your average last frost date and your average first frost date. These dates can help you determine when to plant as well as when to protect your tomatoes from frost. They also help determine the length of your growing season, which is very helpful for planning a planting and harvesting schedule. This is especially important for gardeners with a short growing season. If a variety takes longer to mature than the length of your growing season you have a problem. The plants will probably be killed by frost before the fruit matures.

Days to Maturity

Ripening time varies with location and growing season and is influenced by soil and weather conditions, but the days to maturity cited here gives the approximate number of days from transplanting until the first fruits should ripen. Add 30-35 days if direct seeding. Keep in mind that the maturity date is an estimate of when the

Tomatoes Continued

first tomatoes will be ready to harvest. Variations in your garden can be due to differences in grown season, soil fertility, and other conditions where they were tested.

Which Tomato Type for You?

Determinates, also known as bush varieties. These plants have limited vine growth and their fruits ripen over a short period, sometimes within as few as 10 days. This gives you a large enough batch of ripe tomatoes to work with at one time, making them an ideal processing tomato. Determinate plants are perfect for gardens with limited space or container growing and they work well in northern gardens with short growing seasons.

Indeterminates, also known as vining varieties. These plants have unlimited growth and they keep growing and continue to flower and set fruit until frost. Because of this you will have less mature fruits available for picking at any one time, but you can harvest over an extended period of time.

Starting Seeds Indoors

Follow these easy steps if you want quick germination of seeds and smooth healthy growth of your tomato transplants:

1. Measure the amount of sterile soil less peat starting mix you think you'll need and wet it thoroughly. Put it into a large plastic bag, add water (4 cups mix to 1 cup warm water) and knead until water is absorbed. The medium should be very damp but not so wet that water can be squeezed out.
2. Next fill your containers. You can use cell-packs, peat pots or plastic or clay pots. Gently press the mix into them leaving 1 / 4 inch space at the top to allow for air circulation.
3. Now you can sow your seeds. Using a dibble (pointed stick or pencil), make a hole in the center of the potting mix about 1 / 4 inch deep, drop in 2-3 seeds and cover with potting mix. Or you can use Jiffy Peat Pellets – drop the seeds in the center opening and moisten well. If sowing in flats, sow seeds sparingly in rows or scatter thinly across the soil surface, cover with 1 / 4 inch of potting mix and firm lightly.
4. Mark your containers with variety names and planting dates. Water lightly with a fine spray. Once the seeds are planted, cover the containers with plastic domes or plastic wrap. This creates a miniature greenhouse, which keeps the medium from drying out and you shouldn't need to do any watering until the seed germinates.
5. Place containers in a warm spot out of direct sunlight and away from drafts. On top the refrigerator is ideal, or you can apply bottom heat with a heating cable or electric heat mat. Seed germination will occur in about 5-14 days at 70-90F.
6. Be sure to check your flats every day. When the first green shoots appear, move the containers into direct sunlight. Remove the plastic covering and water or mist as needed at least twice a day. Turn the plants daily to keep them from bending to the light.

Growing

As soon as the seedlings emerge, place them in a very sunny window or under grow lights. If you use grow lights, position the plants 2-4 inches below the light source and light for 12-18 hours a day, turning the lights off at night. Growing the seedlings at temperatures of 60-70F will help prevent legginess. Water carefully, allowing the soil to dry on the surface between watering, but don't let the plants wilt.

Once seedlings have developed their first set of true leaves transplant to individual 2-3 inch peat pots or other containers. For large, stocky transplants use 4 inch pots. Plant them deeper than they originally grew to

check any tendency toward legginess. If you've sown directly into pots, thin to the strongest single seedling by pinching off weaker ones at the soil level.

After the seedlings are 3-4 weeks old, it's time to begin fertilizing. Use seaweed or fish emulsion or dilute 20-20-20 water-soluble plant food at 1/3 to 1/2 regular strength. Fertilize every 10-14 days. CAUTION: When fertilizing, please keep this in mind – MORE IS NOT BETTER – boosting the amount of fertilizer can damage your plants. Too much fertilizer can burn plant roots and leaves thereby stunting their growth and significantly setting back your harvest.

Hardening Off

All seedlings need to spend a week or so outside before being transplanted into the garden. About 7-10 days before planting your tomato seedlings into the garden begin adapting them to outside conditions. Called "hardening off" this process is the way to gradually introduce an indoor plant to an outdoor environment. Even plants you buy at a garden center require this step before planting them out into your garden.

- 1-2 weeks before setting plants out in the garden, cut back on their water and fertilizer.
- Move them outdoors on a relatively mild day. Place them in a sheltered location where they will get partial shade and are protected from the wind. On the first day for just a few hours and give them a little more time each day after. It takes 3-4 days to accustom them to direct sunlight.
- After a week the plants can stay out all night. But if there are frost warnings, move them back indoors temporarily.

Transplanting Outdoors

If possible, avoid setting out unprotected plants until night temperatures are 50°F. Any frost will cause severe damage to the transplants at this stage. Transplant hardened-off tomato plants to the garden in the late afternoon or evening, or choose a cloudy, mild, wind-free day. The young plants don't react well to the hot sun or a strong wind their first few days in the garden. Water plants thoroughly about 30 minutes prior to planting using a full-strength solution of 5-10-10 fertilizer. Dig planting holes about 5-6 inches deep. Add a handful of compost or a teaspoon of 5-10-10 fertilizer mixing it well with the soil at the bottom of the hole. This will help the young tomato plants get off to a good start. Plant the seedlings deep, burying the stems up to the leaves to encourage root growth. The plants will root freely from any portion of the stems buried beneath the soil. If your seedlings have become leggy, remove some of the lower leaves and bury even more of the stem. Always bury leggy stems at an angle as this encourages the development of a strong root system near the surface of the soil. Partially fill the hole with soil to within about 3 inches of the surface and water in thoroughly, being careful to settle soil around roots, eliminating air pockets. Finish filling the hole with soil and firm soil around stem.

Spacing

Plant determinate varieties 12-24 inches apart. Plant indeterminate varieties 14-24 inches apart if staked or 24-36 inches apart if unstaked. Rows should be spaced 36 inches apart.

Soil Preparation

Tomatoes thrive in any reasonably good garden soil that is well drained and gets full sun. The plants do best in soil with a pH ranging from 6.0-6.8. We recommend testing your soil in the fall and adjusting the pH range, if needed, at that time. Fall is also a good time for deep spading or double digging (to a depth of 8-12 inches) and for incorporating organic matter into your soil. The addition of compost, leaf mold or peat moss provides

Tomatoes Continued

organic matter which lightens and aerates heavy soils as well as increasing the moisture holding capacity of sandy soils.

In the early spring, till or spade the surface again, and rake to break up clods and remove stones. Fertilize as recommended by your soil test results.

Fertilizing

Tomatoes need quite a large food supply. Phosphorus is very important, but too much nitrogen will result in lots of leaves and few fruit. Manure should be used, if at all, with caution.

We highly recommend foliar spraying every two weeks with fish emulsion, liquid seaweed extract, or water soluble 5-10-10 fertilizer (diluted to 1/2 strength). Foliar fertilizing gets the nutrients to the plant faster than by adding them to the soil and waiting for the roots to take them up. Spray in the morning while it's still cool and the dew lingers on the leaves. This way all the fertilizer is absorbed. Once the plants are in full bloom and you notice fruits developing, stop foliar spraying as it may result in harm to the developing fruits.

Alternatively, use a granular fertilizer high in phosphorus and potassium and low in nitrogen content, such as 5-10-10. In all but the most fertile gardens side-dress at regular intervals (every 14-21 days) during the growing season.

CAUTION: When fertilizing, please keep this in mind MORE IS NOT BETTER boosting the amount of fertilizer can damage your plants. An overdose of fertilizer causes plants to grow too rapidly and damage new roots thereby stunting plant growth and significantly setting back your harvest.

Water

Tomatoes need an even supply of water throughout the growing season. Erratic watering can result in problems such as blossom end rot or cracking. Plants need at least 1 inch of water per week for steady growth. In hotter, drier parts of the country, 2 inches of water per week are needed during the summer months. The soil should be soaked to a depth of at least 6 inches. If you don't get enough rain, water every 4-5 days on light sandy soil and every 7-10 days on heavy soil.

Mulching

Tomatoes need a steady supply of moisture and a thick mulch will help retain soil moisture which in turn, helps guard against blossom-end rot. Apply the mulch (3-6 inches deep) after the transplants have been in the garden 5-6 weeks. The mulch also controls weeds, minimizes soil compaction and moderates soil temperature.

If you choose not to mulch, you must keep your tomatoes weed-free. This is important since the weeds compete with the plants for water, food and space. To keep weeds in check cultivate the soil to a depth of 1 inch every 7-10 days until the plants are well established.

Staking / Caging

Support systems for tomatoes offer definite advantages. Plants grow upright, making them easy to work around and the fruits don't touch the ground, making them easier to harvest.

Tomatoes Continued

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Staking / Caging

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Tomatoes Continued

In large plantings of tomatoes, rows of staked or caged tomatoes should be spaced 30-42 inches apart and the plants should be spaces 24-30 inches apart in the rows. If you do not stake or cage indeterminate plants, rows should be spaced 6 feet apart and plants 4 feet apart for proper air movement and plant development. Staking is the preferred method of growing tomatoes where space is limited. It's easier to harvest from neatly staked plants and the ripe fruits are easy to spot.

To stake a tomato, drive a strong 5-7 foot wooden or metal stake into the ground about 1 foot from each plant. Plants will need tying at regular intervals throughout the summer. Use soft string, strips of old sheeting or other soft, stretchable materials – old pantyhose make excellent ties. Do not tie stems so tightly that they are likely to be strangled by the ties as the stems grow and thicken.

You will also need to prune your plants regularly. The classic method of pruning removes all but the main stem, but this leaves fruits exposed to the sun, which can result in sunscald or cracking. We prefer allowing the first sucker, or side shoot, and the main stem to grow which results in two stems, both of which need to be tied to the stake. This double-stem technique results in more leaves to protect the fruit and also in more fruits per plant. After you have decided which method you will use, be diligent in removing all excess suckers.

If this sounds too labor intensive, then another effective measure is to cage the plants. Simply set one cage over each plant and rest the branches on the horizontal wires. There's no need to prune your plants when you use cages.

How to Extend Your Growing Season

Short Growing Season Areas: The best way to get the most tomatoes from your garden is to use season stretching strategies and devices. These ideas and products can enable you to get an earlier start in spring and help to protect your tomatoes from killing frosts in fall. Keep in mind when going for the earliest tomatoes in your neighborhood that sometimes the plants don't do well when planted out early and sometimes they do great. In any case, experimentation is the answer when determining what will work in your garden.

Varieties: If you have a short growing season, choose early varieties. Some mid-season varieties can also be grown but stay away from the huge beefsteak-types as they may not have time to ripen.

Location: Where you plant your tomatoes has as much to do with avoiding frosts and cold weather as when you plant. Every yard has pockets or areas that warm up earlier in spring and stay warmer later into the fall. Find these niches in your yard and enjoy harvesting earlier and later than anyone else in your neighborhood. Good places to consider:

- The south side of any building – especially if it's protected from the wind Courtyards
- Near paved surfaces such as driveways – especially if the pavement is dark colored

Row Covers: Also known as floating row covers because the lightweight fabric literally "floats" on top of the plants. They protect from frost, enable you to plant sooner and thus enable you to harvest sooner and you can expect to harvest your first fruits 10-14 days earlier. They don't overheat easily and they let in light, air and water so they can be left on until you need to weed, or stake your plants. Row covers also help to deter insects, but must be removed when blossoms appear or when daytime temperatures reach 80°F.

Wall O'Water: Double-walled, clear plastic cylinders that hold water and allow you to plant outdoors early. It also protects seedlings from frost by using solar heat to warm tubes filled with water. Wall O' Waters have been

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reported to protect tomatoes in temperatures as low as 16°F. They need to be removed after a few weeks, but give a great jump on the growing season.

Plastic Wrapped Cages: Wire tomato cages wrapped with 6 mil clear plastic act as miniature greenhouses allowing you to plant out earlier and protects the seedlings from frost and wind. Make certain to cover the tops when frost threatens.

Hot Caps: A great way to protect plants from the cold. You can purchase these at garden centers or create your own by cutting the bottoms out of clear plastic milk jugs. Be sure to leave the top off during the day to vent out hot air on sunny days.

Black Plastic Mulch: Plastic mulch conserves moisture, increases soil temperatures, protects the fruits from rot and enhances earliness and yields. In addition black plastic mulch suppresses weeds and helps retain moisture, thus improving the growth of tomato plants and improving yields.

Red Plastic Mulch: Developed by the USDA and Clemson University this mulch is called Selective Reflecting Mulch or SRM-Red. Studies have shown it increases tomato yields up to 20% (do not use in hot-summer areas). It warms the soil and reflects far-red light wavelengths which triggers the release of a natural plant protein that stimulates more rapid growth and development. It also helps retain moisture, but does not suppress weeds.

Warm Growing Season Areas: Very high, sustained heat in the south makes it necessary to grow two crops each year. This way, the summer heat that hinders good pollination can be avoided. Transplant your first crop to the garden in late January to early February. Transplant your second crop August to September.

White Plastic Mulch: Use for summer plantings to reflect light and keep the soil cool.

Organic Mulch: Using a 2-4" layer of grass clippings, straw or other organic material can help keep the soil from getting too hot and thus extend your harvest season.

Shade: If you want to try growing tomatoes in the hottest part of summer, partial shade may be an answer, but keep in mind the plants require at least 6 hours of sunlight for growth and to ripen fruit.

Tomato Troubles

Tomatoes are susceptible to many diseases and a few insects, but rarely do such problems become serious for the home gardener.

Blossom End Rot is a blackening of the fruit on the blossom end due to a calcium deficiency often related to water uptake. Keep plants well-watered during the growing season, particularly during periods of drought, to help ensure better yields and help control problems such as blossom end-rot. Proper soil testing, lime applications and foliar treatment with calcium solutions will also help avoid this problem.

Early Blight or alternaria is a fungal disease and one of the most common. Early determinate varieties are most susceptible. This disease causes brown spots surrounded by yellow that spreads outwards on the older leaves, eventually browning and killing the leaves. Plants are most susceptible in moist weather after they have set a lot of fruit. To prevent early blight, use young, healthy transplants and fertile soil for strong growth, and try to keep foliage dry. Clean up tomato plant refuse in the fall and rotate crops. Use copper fungicide to reduce infections.

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Insect pests are best prevented by keeping a close eye on your plants throughout the growing season. Use Neem oil or crop row covers to discourage flea beetles early in the season, when they can be the most destructive. Damaged or stripped foliage is almost a sure sign of tomato hornworms. They can be controlled by hand-picking or with Bacillus thuringienses (Bt), sold as Dipel. Pick off Colorado potato beetles or use

Colorado Potato Beetle Beater (Bt var.tenenbrionis), Neem oil, or pyrethrum products.

Harvesting / Storage

The very best tasting tomato is one that is vine-ripened and picked when the fruit has reached its full color. Harvest the fruits as they ripen. When there is a slight give to the fruit gently lift by hand until the fruit stem snaps. A fully ripe tomato will come off the vine easily when you tug it gently.

Use ripe tomatoes immediately, or hold them at room temperature. Do not refrigerate unless necessary. Cold temperatures below 55°F can slow down and even prevent the ripening process. If you have overripe tomatoes you need to hold for a day or so, refrigerate them, but realize that the flavor will suffer. Bring back to room temperature before eating.

At the end of the season, all sizeable green fruits should be picked before the first hard frost. The greenest fruits may be used for making pickles and those of ripening size may be stored in shallow boxes or trays in a cool spot (like the floor of your garage) where they will ripen gradually and provide usable (though not of vine-ripened quality) fruits for many weeks.

Green tomatoes do not ripen well on a windowsill. The sun reddens the tomatoes' skin without allowing it to ripen from the inside out. If you want your tomatoes to ripen slowly, keep them between 54°F and 61°F. For rapid ripening the ideal temperature is between 61°F and 86°F. If you want to extend the ripening period, put some tomatoes in a cool, dark area and keep others at room temperature.

Once you get started growing tomatoes you eventually find yourself with more than you know what to do with. You can always give them to friends and unlike zucchini, tomatoes will never be turned down. Of course there are loads of recipes to try, from homemade Italian marinara sauce to salsa to gazpacho or you can prepare them for your own use during the winter by putting them up in various ways.

Turnips

Turnips are a cool-season root vegetable in the cabbage family, valued for both their tender roots and nutritious greens. They grow quickly and are excellent for spring and fall harvests.

When to Plant	Early spring / late summer
Lighting	Full Sun
Seed Spacing	1/2
Row Spacing	1′
Planting Depth	1/2″
Space After Thinning	2″
Days to Germinate	3-14
Days to Maturity	45-70

Soil and Fertilizing

Turnips prefer loose, well-drained soil with good organic matter and a pH around 6.0-6.8. Lightly amend soil with compost before planting to encourage rapid root growth.

Planting

Direct-sow seeds in early spring as soon as soil can be worked, and again in late summer for fall harvest. Sow seeds about 1/2 inch deep, keeping seed rows close. Thin seedlings to 2-4 inches apart once they have true leaves to allow roots space to develop.

Watering

Keep soil evenly moist throughout the growing season. Turnips tolerate light dryness but irregular moisture can lead to woody or bitter roots. Mulch helps retain moisture and reduce weeds.

Pests and Diseases

Turnips are susceptible to flea beetles, cabbage maggots, and leaf spot diseases. Rotate crops, use row covers early in the season, and practice good sanitation to reduce problems.

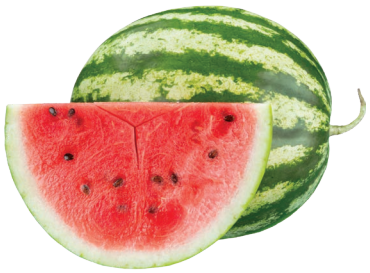
Harvesting / Storage

Harvest turnips when roots are about 1 1/2-2 inches in diameter for best texture and flavor. Pull roots gently with a fork. Turnips store well in the refrigerator or a cool, moist root cellar, and may sweeten after frost.

Watermelon

Watermelons are a warm-season crop grown for their large, sweet fruit. They require full sun, warm soil, and plenty of space to vine in order to produce high-quality melons.

When to Plant	After last frost
Lighting	Partial Shade
Seed Spacing	4″
Row Spacing	5-6′
Planting Depth	1/2″
Space After Thinning	2′
Days to Germinate	5-10
Days to Maturity	58-90



Soil and Fertilizing

Watermelons grow best in well-drained, fertile soil rich in organic matter with a pH between 6.0 and 6.8. Incorporate compost or well-aged manure before planting. Avoid excessive nitrogen once vines begin to run, as this promotes leafy growth at the expense of fruit development.

Planting

Direct sow seeds outdoors after all danger of frost has passed and soil temperatures reach at least 70°F. Sow seeds 1 inch deep in rows or hills and thin seedlings to 24-36 inches apart. Watermelons may also be started indoors 2-3 weeks early, but transplant carefully to avoid root disturbance.

Support and Growth Habit

Watermelons are vigorous, sprawling vines that require ample space. Smaller varieties may be grown on sturdy trellises with fruit support, while standard varieties are best grown on the ground. Avoid moving developing fruit once set.

Watering

Provide deep, consistent watering throughout the growing season, especially during flowering and fruit development. Aim for 1-2 inches of water per week. Reduce watering slightly as fruit matures to improve sweetness and prevent splitting. Water at the base of plants to reduce disease pressure.

Pests and Diseases

Common pests include cucumber beetles, aphids, and vine borers. Diseases such as powdery mildew and anthracnose may occur in humid conditions. Practice crop rotation, maintain good airflow, and monitor plants regularly.

Harvesting / Storage

Watermelons are ready to harvest when the underside turns creamy yellow, tendrils near the fruit dry, and the rind resists puncture. Harvest carefully to avoid damaging vines. Watermelons are best enjoyed fresh but can be stored short-term in a cool location.

Wildflowers

Site Selection Considerations

- Does the site support plants now? If nothing is growing, the site is unlikely to support wildflowers.
- Will there be adequate moisture during germination? Can you supply additional water?
- What weed seeds are likely to be present in the soil? The fewer weed seeds there are the more successful the planting will be.

When to Plant

Late fall or very early spring is best. The perennials in the mixes need to undergo several freeze/thaw cycles to break the natural seed dormancy. Rocky Mountain and Xeriscape Mixes have more annuals in them, and are more successfully planted later in the spring. The primarily perennial Montana Native Mix should be planted in November or March/April for necessary cold stratification.

Seed Application

It is helpful to mix 1 or 2 parts sand to 1 part seed for even distribution. Rake in lightly, covering seeds to a maximum depth of 2-3 inches, or drag the area lightly with a piece of chain link fence. To create a natural meadow, prairie, or colorful lawn effect, the wildflower seeds can be mixed with bunch type grasses. A mix of at least 10% flower seeds to 90% grasses will give a good show of color. To maintain this planting, mow or burn the areas in the fall.

Watering

In an irrigated area, soak the area thoroughly and maintain consistent moisture for 4-6 weeks. In a non-irrigated area, plant in fall or early spring before anticipated snow or rainfall. After seedlings are established, watering may be reduced. In arid regions, 1/4 inch of supplemental moisture per week may be needed to maintain optimum color.

Weed Control

If wildflowers are planted in a weedy area, there will be a large bank of weed seeds that will germinate. Weed control is achieved in two stages—initial clearing of the site and ongoing maintenance. If spring planted, allow the first growth of weeds to germinate and remove them before planting wildflower seed. Mixing the wildflowers with clover and fescue can help them compete with weeds. After wildflowers have germinated, further weed control is usually necessary. If practical, pull all weeds as soon as they can be identified.

Maintenance

Wildflowers may be mowed to a height of 4-6 inches in the fall after seeds set. Leave the residue on the ground as a reservoir of viable seeds.

Winter Squash

Winter squash gets its name not from when it's grown, but from its ability to store through the winter. Harvested fully mature with a hard rind, these squash can be cured and kept for months in a cool, dry place, providing fresh vegetables long after the growing season ends. Unlike tender summer squash, winter squash is meant to be stored and enjoyed throughout the colder months.

When to Plant	After last frost
Lighting	Partial Shade
Seed Spacing	3″
Row Spacing	4-5′
Planting Depth	1″
Space After Thinning	18″
Days to Germinate	4-7
Days to Maturity	70-100

Soil and Fertilizing

Winter squash grows best in well-drained, fertile soil rich in organic matter with a pH between 6.0 and 6.8. Incorporate compost or well-aged manure before planting. Avoid excessive nitrogen once vines begin running, as this encourages foliage growth rather than fruit development.

Planting

Direct sow seeds outdoors after all danger of frost has passed and soil temperatures reach at least 65°F. Sow seeds 1 inch deep in rows or hills, then thin seedlings to 24-36 inches apart. Winter squash may also be started indoors 2-3 weeks early, but transplants should be handled carefully to avoid root disturbance.

Support and Growth Habit

Winter squash plants produce long, vigorous vines that require significant space. Smaller-fruited varieties can be trained onto sturdy trellises with proper fruit support, while larger types are best grown on the ground. Allow vines to spread freely and avoid disturbing developing fruit.

Watering

Provide consistent, deep watering throughout the growing season, especially during flowering and fruit development. Aim for 1-2 inches of water per week. Reduce watering slightly as fruit matures to help harden rinds and improve storage quality.

Pests and Diseases

Common pests include squash bugs, cucumber beetles, aphids, and vine borers. Diseases such as powdery mildew may occur later in the season. Use crop rotation, proper spacing, and regular monitoring to minimize issues.

Harvesting / Storage

Harvest winter squash when rinds are fully hardened and resist puncture, and stems begin to dry. Cut fruit from the vine with several inches of stem attached. Cure squash in a warm, dry area for 10-14 days, then store in a cool, dry location for long-term keeping.