

Beginning Vegetable Gardening

Growing your own fresh produce can be a rewarding experience. In addition to the satisfaction gained from growing your own food, growing your own vegetables allows you to control which pesticides will be used in the process. To make your garden a success, follow these tips from Cornell Cooperative Extension.

Site selection. Locate your garden as close to your home and a water source as possible. A garden that is in a convenient and highly visible spot is more likely to be maintained well. If you live in an old house where lead-based paint may have been used, keep the garden away from the foundation. Most vegetables require full sun, so choose a site that gets at least six hours of direct light all season. A south or southwestern exposure is ideal. Large trees will compete with nutrients as well as sunlight. Also take into consideration the amount of shade that trees will cast as they grow.



Well-drained, fertile soil is essential to a productive vegetable garden. Avoid siting the garden in low areas where puddles remain for more than few hours after a heavy rainfall. A home compost pile will provide an excellent source of organic material for your garden. If drainage is a problem, raised beds are an option. Very few gardeners have perfect conditions. Consider using a few small planting areas instead of a large one to take advantage of fragmented sunny spots around your yard. Lower branches of trees can be pruned to admit more light. You can interplant some vegetables in a flower garden. Cool season vegetables and some root vegetables tolerate more shade than warm season, fruiting varieties. Beets, cabbage, green onions, lettuce, parsley, radishes, and Swiss chard are a few that can be grown in light shade. *Unfortunately, no vegetable can grow in complete shade and even these will require at least 4 hours of direct sun.*

Space needed. You can grow an abundance of vegetables in 100 square feet or less of garden if you choose the right plants. Consider the level of commitment you're willing to make to your garden. It takes at least one hour to prepare, one hour to plant, and one half hour per week to maintain a 10 x 10 plot.

Choosing the right plants. If you are new to gardening, start out with a few easy to grow crops. Increase the variety as you gain experience, and confidence. Consider the following questions when making variety choices. What vegetables do you and your family like best? Which are easiest to grow? Which are superior to store bought? Which are disease resistant? Which make best use of space relative to cost?

Home grown peas, beans, and tomatoes are easy to grow and have better flavor than store bought. Celery, in contrast, is more difficult to grow and is most often better purchased. Salad greens, beets, herbs, snap beans and tomatoes are good choices for those with limited space. Broccoli, cabbage, cauliflower, corn, cucumbers, squash, and melons take up considerably more space and require careful attention to pest control.

How Much Should You Plant?

The following table gives a general idea of how much a family of four should plant. Of course, these numbers are somewhat arbitrary and will depend on the amount you eat and on eating preferences.

Seeded Crops		
Crop	Lgth of Row (ft)	Seed required
Bush beans*	25	¼ lb.
Beets*	15	1 oz
Carrots*	20	1 pkt
Cucumbers, slicing or pickling	10	1 pkt
Kale	25	1 pkt
Kohlrabi	5	1 pkt
Lettuce, head*	25	1 pkt
leaf*	20	1 pkt
Muskmelon	15	1 pkt
Onions	20	1 pkt
Peas*	40	½ lb.
Potatoes	50	5 lbs. tubers
Pumpkin	10	1 pkt
Radish*	5	1 pkt
Swiss chard	10	1 pkt
Spinach*	40	1 oz
Squash, summer	8	1 pkt
Squash, winter	12	1 pkt
Sweet corn*	30	1 pkt
Turnips	10	1 pkt
Watermelon	20	1 pkt

Transplanted Crops		
Crop	Length of Row (ft)	Plants required
Asparagus	75	50 roots
Broccoli*	15	10
Brussels sprouts	15	8
Cabbage*	10	6
Cauliflower*	15	10
Celery	4	6
Eggplant	5	3
Lettuce, head*	25	16
Muskmelon	15	5 hills
Onions	20	¼ lb. sets or 50 plants
Parsley	2	6
Peppers, hot	10	6
Peppers, sweet	10	6
Pumpkin	10	1 hill
Rhubarb	15	6 roots
Squash, summer	8	1-2 hills
Squash, winter	12	1-2 hills
Tomatoes	12	4
Watermelon	20	4-5 hills

*More than one planting possible per year.
(0.25 to 0.5 lbs. of seed for 40-foot row)



Once you have decided what you are going to grow, how many plants will you need? Although this will vary according to your taste and intended uses, you will want to avoid over use of any one crop. A dozen lettuce plants or a few square feet of radishes will quickly overwhelm you if they all mature at once. You can plant a few at a time at bi-weekly intervals to avoid this problem. Likewise, a few tomato plants will supply the average family with more than enough fruit. You can plant warm season crops between the rows of cool season crops to make use of garden space. The early crops will be harvested before the warm season vegetables need the extra room. Learn as much as you can about the crops you intend to grow from experienced gardeners, gardening books, magazines, seed catalogs, and your local cooperative extension.

Garden layout. Once you have selected your crops and garden site, make a layout on paper showing where the plants will go. Consider building permanent paths and planting beds. They will allow you to use water and fertilizers more efficiently. The beds can be as long as you like. To void compaction, limit the width to between 3-5 feet so you can reach the center without walking on the planting area. You may want to group plants with similar cultural requirements together or group early crops together to make successions easier. Locate taller vegetables on the north side of the garden so they won't shade shorter ones. You can plant vining

crops where they might grow up a garden fence. You can plant in rows or “blocks”. Blocks allow you to grow more plants per square foot and results in higher yield.

Preparing the soil. Mark off the edges of your plot and remove any large rocks, weeds or sod. Pay special attention to perennial weeds and grasses; they can grow back from the small pieces left behind. Use a sharp spade to strip sod off one-inch below the soil surface. Next, the soil should be loosened. This can be done as soon as the soil is free from frost and dry enough to crumble in your hand. Use a shovel or spading fork to loosen the soil, breaking up any large clumps. This is the time to check that your pH level is sufficient for the crops you will be growing. Two-three pounds of 5-10-5 fertilizer worked into the soil per 100 square feet is sufficient. Compost is a great addition to the garden soil. Work the soil down to at least 8” deep. “Double digging” will help your plant roots penetrate the soil and give them an extra edge, although it’s a lot more work. If you use a power tiller, be sure all large rocks have been removed. Take your garden rake and smooth the surface.

Direct seed or transplant. Most crops can be direct seeded right in the garden, but many perform better when grown from transplants that have been grown beforehand in a container of soil. Crops to direct seed include: bean, beet, carrot, Chinese cabbage, cucumber, kale, lettuce, melons, peas, radish, Swiss chard, squash and turnips. Crops that grow well from transplants include broccoli, cabbage, cucumber, eggplant, kale, lettuce, leek, onion, parsley, pepper and tomatoes.

Transplants can be purchased at your local garden center. Be sure to choose young, sturdy-looking plants. When you are ready to plant, refer to your garden layout. Set seeds and plants at their recommended spacing, per package directions. Transplants should be set slightly deeper as they have been growing in their containers. Gently firm around their roots, and water them generously. A transplanting fertilizer can be added to the water by mixing one capful of 5-10-10 fertilizer in three gallons of water. Be sure to thin your plants when necessary, as this allows the remaining plants to develop to their full potential, and promotes air circulation, which prevents many diseases.

Plant protection. You can extend your growing season by protecting young plants from light frosts with plastic row covers, hot caps” or other cloches, polyester fabric such as Reagronet, or by using a cold frame. Dark soil mulches absorb the sun’s heat. You can get a jump on the season by adding a large amount of compost into the garden in the fall. Black plastic mulch can be used to warm the soil for heat loving crops.

Watering. Keep seeded areas evenly moist until plants emerge, using additional water during dry spells. Most vegetables require one inch of water per week. To minimize disease, water early in the day, and try to avoid wetting the plants’ leaves. Organic mulches such as grass clippings, chopped leaves or compost will slow water evaporation from the soil, discourage weeds, and keep plants’ roots cool during very hot weather. They will also enrich the soil as they decompose.

Weeding. Weeds will compete with your plants for nutrients, sunlight and moisture. They quickly overrun a garden, but are easily controlled when small. By using a 3-inch layer of organic mulch, most weed problems will be prevented. Regular weekly weeding not only enables you to keep up with those that do pop up, but lets you check for insect and disease problems as well. Learning to recognize early symptoms of pests and disease will enable you to have better success with pest control at an early stage.

Fertilizing. How often you fertilize will depend on the types of plants grown. Long season crops and heavy feeders such as squash and tomatoes will require more fertilizer than short season crops such as lettuce and other greens, and root crops. 5-10-5, 5-10-10 or equivalent fertilizer can be used. One to two pounds per

100 square feet is sufficient. Over application can injure plants, especially if the soil is dry. Liquid fertilizer can be poured around the base of plants. Apply granular fertilizer a few inches away from the base of the plant and work down into the soil, taking care not to damage any plant roots.

Harvesting. Harvest crops as soon as they mature. This is often indicated by a change in color, texture, or odor. You can harvest the outer leaves of plants such as lettuce, mustard and chard a few at a time, or you can pick the whole plant to allow for succession planting. Many crops require a regular harvest to stay productive. Snap beans, peas and summer squash will stop fruiting if their seeds begin to mature. Leafy crops and broccoli will also produce more if picked regularly. Try to use produce as soon as possible after it is harvested, as its quality decreases with time.

There are as many different ways to garden, as there are gardeners. Don't be afraid to experiment with different growing methods until you find one that is right for you.

Common vegetable problems & their causes.

- ***Failure of tomatoes, peppers & eggplant to set fruit (blossom drop).*** If the plants are growing well, this frequently is due to adverse night temperatures below 60 degrees F. or above 75 degrees F. Less often this is due to excessive nitrogen fertilizer use or overhead sprinkling.
- ***Blossom end rot of tomatoes & peppers*** occurs when soil becomes very dry, especially during fruit formation. Proper irrigation prevents this. Some varieties are more susceptible than others.
- ***Poor plant growth and/or small fruit sizes.*** Often a result of using old, large or overly hardened transplants. Young transplants (5-6 weeks from seeding) with 3-7 new leaves and that are just slightly hardened off normally produce the best yields and fruit size.
- ***Cucumber plants suddenly wilt.*** Leaves may show dead areas and fruit may be mottled. Likely cucumber mosaic virus, a common disease problem in NYS. Select mosaic resistant varieties. Sudden rise in temperature or depleted soil moisture can cause wilting too, but plants will recover.
- ***Poor or slow germination of seed.*** Several possible causes: soil temperature too low or too high, poor seeding techniques (too deep, lack of firming, improper watering), no seed treatment (peas, beans, corn), maggots feeding in soil, birds, lack of moisture, too much moisture, etc.
- ***Generally slow or poor growth of all crops.*** Several possible causes: low pH, low fertility, cool weather, lack of sunlight, poor drainage, too little or too much moisture, poor soil structure.
- ***Lettuce and spinach going to seed.*** This is normal for these crops under warm temperatures and long days. Spring and fall planting and proper variety selection are remedies.
- ***Onion bulbs fail to reach desirable size.*** Several possible causes: wrong planting date, improper variety selection, crowding of plants or high weed growth, and lack of moisture especially early in growing season.
- ***Irregular kernel development on sweet corn.*** May be due to inadequate pollination. Planting sweet corn in blocks of several short rows rather than in long single rows may help.
- ***Sunburning (greening) of potato tubers.*** Lack of covering developing potatoes is a common cause. Hilling soil along row as plant grows helps to keep tubers covered.
- ***Snap bean flowers fail to develop.*** High daytime temperatures (above 90 degrees F.) often are the cause. Setting usually resumes when temperatures drop.
- ***Garden peas cease flowering.*** A natural occurrence when summer temperatures arrive. Peas perform best when planted in the early spring.
- ***Off-shaped cucumbers.*** Often due to a shortage of soil moisture. Rather cool temperatures at time flowers are developing can also be a cause. Poor pollination due to lack of bees or low number of male flowers is another possibility.
- ***Rough, misshapen tomatoes.*** Often associated with low temperatures (50-60 degrees F.) while fruits are forming. Some varieties are worse than others. First fruits often are the most misshapen.

- ***Small pinholes in leaves of young plants.*** Inspect for flea beetles. Flea beetles are small, black, jumping insects that chew small holes in leaves of many vegetable crops, producing a shotgun effect.

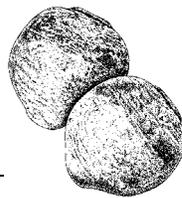
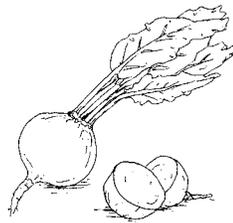
To Fit Your Vegetable Needs

Pick vegetables that:

- you and your family like
- are easy to grow
- are recommended varieties

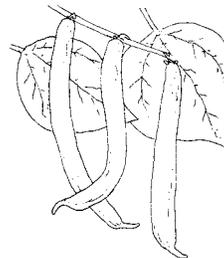
Vegetables that are easy to grow:

- beets
- bush and pole beans
- carrots
- collards
- corn
- cucumbers
- kale
- leaf lettuce
- onions
- pumpkin
- radishes
- rutabaga
- ***spinach***
- squash
- Swiss chard
- turnips



In a 4-foot x 4-foot space, you can grow:

- 4 tomato plants
- 24 beets
- 32 bush beans or 6 pole beans
- 144 radishes
- 48 spinach plants
- 24 leaf lettuce
- 24 chard
- 96 carrots
- 8 broccoli
- 6 cabbage
- 72 turnips
- 72 onions
- 1 pumpkin, squash or cucumber vine
- 12 mustard, kale or collard plants
- 8 potato vines
- 9 corn plants



Try these space savers:

- grow cucumbers on a fence
- grow midget varieties of vegetables
- plant radish seeds with vegetables that come up slowly
- grow pole beans on a teepee

