



Growing Vegetables

There's nothing quite like the taste of vegetables harvested fresh from your own garden. And in Sonoma County you can grow vegetables all year.

This publication describes how to plan a vegetable garden and how to prepare and plant the garden. Information about planting specific vegetables—when to plant, recommended spacing within and between rows, average days to harvest and some helpful hints—is given in the UC Master Gardeners of Sonoma County's [Vegetable Planting Summary](#) and, the more concise, [Year-Round Food Gardening in Sonoma County](#).

Detailed information on particular problems is available from the Master Gardeners (see the paragraph above "Harvest" on the last page).

Choose the Location

The ideal vegetable garden is in a sunny, fairly level location close to the kitchen, with a handy water source and garden tools stored nearby.

Choose a sunny location. Most vegetables need full sun, which means at 6 to 8 hours of sunlight that spans morning through mid-afternoon. Vegetables can be grown year-round in Sonoma County, so try to find a location that is in the sun throughout the year. If you have no spot in full sun, consider gardening in containers so that you can follow the sun. Leafy greens require less sun, but they do not do well in full shade.

Avoid competition. Don't plant close to trees and other large plants whose roots may grow into the vegetable garden.

Avoid pollution. Don't plant close to a road or driveway. Keep your vegetables well away from any plants you spray with pesticides, such as roses. If you want to put your vegetables where pesticides have been used, find out how long those pesticides persist in the soil.

Choose an accessible location. You will be more likely to harvest your vegetables at their peak of perfection if the garden is convenient to the kitchen. And you'll remember to do necessary chores like weeding and staking if you see the garden from your deck or patio. If possible, store your equipment nearby—tools, gloves, twine, etc. And have a convenient place to put the weed and spent plant material from your vegetable garden that you will be adding to your compost pile.

Choose an area with good drainage. Few if any vegetables like "wet feet." If drainage is a problem, consider using raised beds. To prevent erosion, the ground should be level or only gently sloped. If it is steep, you can terrace it using rocks or boards as short retaining walls.

Design the Garden

Plan not to walk where plants will grow. Plants grow poorly in compacted soil. Don't waste your efforts by packing the soil down.

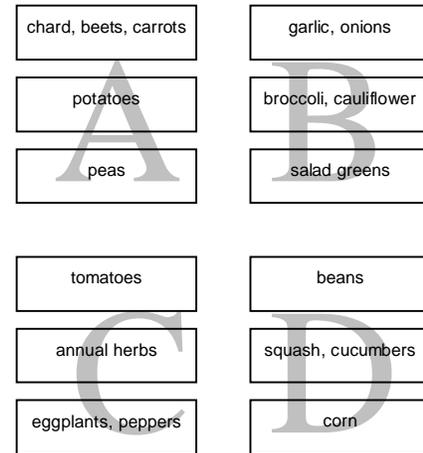
Divide your garden into beds (sometimes called "wide rows") 2- to 4-feet wide so that you can reach the middle from either side. The beds can be any convenient length. Leave paths between the beds. Scoop some of the soil from between the beds to make mounded beds several inches higher than the paths. Adding compost to the beds will raise their level further.

If you have very rocky or poorly drained soil, or if you have a severe gopher problem, you may want to build raised beds with permanent sides of wood or masonry. Line the beds with hardware cloth or aviary wire to discourage gophers, and fill the beds with amended soil. However, materials and labor to build a large vegetable garden this way can be expensive.

Plan on crop rotation. Many problems with vegetables can be minimized by waiting at least three years before growing a vegetable or related vegetables in the same place they were grown before. For this purpose, the plant groups are the Solanums (tomatoes, eggplant, peppers and potatoes), Legumes (peas and beans), Cucurbits (cucumber, squash and melon), Brassicas (cabbages, broccoli and cauliflower), Roots (beets, Swiss chard [a beet relative], radishes, carrots, parsnips and turnips), Greens (lettuce and spinach), Onions (onions, leeks and garlic) and Corn. Keep records of what is planted where.

The traditional four-square garden lends itself well to rotation. Divide your plot into four squares. Separate the squares with paths wide enough for your wheelbarrow, and sub-divide each square into beds with narrow paths between them. Plan a way to rotate the contents of the beds so that one plant group will be grown in a given bed once every four years. This is easier to do if you grow only one plant group in each bed. The example at the right shows a plan that accomplishes this objective. You can, of course, make your garden any shape you want, but do think about how you can rotate the crops in successive years.

Example: Garden Designed for Rotation



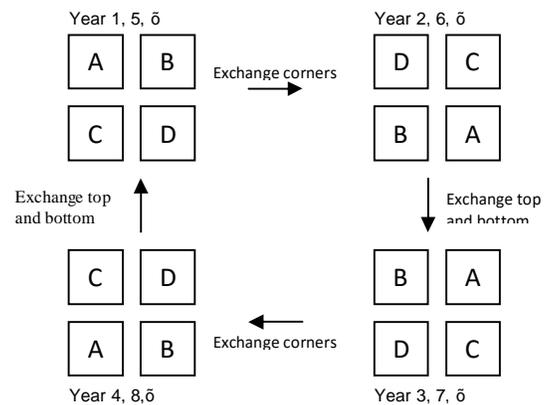
Plan for growing year-round. Plan your planting so that you have some space for fall crops to be planted in late summer, when warm weather vegetables like tomatoes and peppers will be just approaching peak harvest. (The Master Gardeners' [Year-Round Food Gardening in Sonoma County](#) identifies the cool and warm weather crops and gives the best time to plant each vegetable.)

Early spring crops will be harvested by summer and can be followed by cool weather plants in the fall. Alternatively, cover crops may be planted and, then, chopped and dropped on top of the soil or gently turned into the soil 2 to 3 weeks before the vegetables are planted.

Provide for irrigation. All vegetables require some regular watering. With Sonoma County's hot, dry summer climate and during a drought, drip irrigation is the most efficient way to deliver water to crops. (See the Master Gardeners' [Drip Irrigation in the Food Garden](#) and [Drip Irrigation Instructions and Shopping List](#) for more information.) If you don't install irrigation, you will need a hose that will reach all parts of the vegetable garden. In fact, you should have a hose handy for watering seed beds, seedlings and newly planted vegetables.

Be prepared to protect your plants from animal pests. Birds love tender, baby plants; use bird netting to keep them from eating your seedlings. If gophers are a problem in your area, plant in gopher baskets or in raised beds lined with hardware cloth or trap them. Keep deer out of the garden with a high fence or other deer-proof barrier.

Rotation Plan for the Four Quarters:



Get Ready for This Year's Planting

Choose what to grow this year (or season). Consider what vegetables you and your family enjoy and which are noticeably better when eaten fresh from the garden. Are there particular varieties that you like that are hard to find in stores and farmers markets? Find out which varieties do best in your area—the Master Gardeners provide a list of [recommended vegetable varieties](#).

Select crops and varieties. Plan your garden with limited water and food production in mind. Plant only what your family will eat. While you can spread out your harvest by planting an indeterminate tomato variety, a determinate variety can be harvested at one time requiring less water. Or, an early variety will provide more food production for the water investment. Look for [drought-resistant varieties](#) and varieties with shorter days-to-maturity. Plant a smaller amount with successive small plantings at 2- to 4-week intervals; this works with many vegetables: salad greens, radishes, beets, carrots, potatoes, beans, peas and corn. Look for disease-resistant vegetable varieties, and [encourage beneficial insects](#) by planting flowers near or in your vegetable beds.

Get seeds or seedlings. In general, big seeds, such as beans, peas, corn, squash, cucumbers and melons, should not be transplanted, as they grow much better when planted directly in the garden. Direct seeding is also good for vegetables that are grown close together to harvest small, such as salad greens, beets, carrots and radishes. Other vegetables, such as broccoli, cauliflower, tomatoes, peppers and eggplant, are best planted as starts (seedlings). The Master Gardeners' [Year-Round Food Gardening in Sonoma County](#) provides advice on whether to direct seed or to plant seedlings.

Order seeds early to get the varieties you want and to allow time for delivery. If you are starting plants in containers, plant the seeds 6 to 8 weeks before you will be ready to plant out in the garden. If you grow plants inside, gradually get them accustomed to direct sun and outside temperatures. If you buy seedlings, look for healthy, well-rooted (but not pot-bound) seedlings at the appropriate planting time.

Prepare Beds for Planting

Plant at the appropriate time. Start early crops in February to March, summer crops in April to May. When spring crops are harvested, it's almost time to sow fall crops—fall and winter crops have to start in late summer and early fall. Planting times are recommended in the Master Gardeners' [Year-Round Food Gardening in Sonoma County](#). If you have divided your garden into beds, you can prepare only as many beds as you are ready to plant. Don't work the soil when it is too wet.

Remember that you have to take your own conditions into account. Plant earlier if you almost never have frost, later if you are in a frost pocket. Wait until after frost for warm season crops such as tomatoes, peppers and eggplant. Be sure not to plant seeds too early—warm season vegetable seeds can rot or fail to germinate if too wet or too cold.

Add compost. If this is the first time the planting bed is being used to grow vegetables, dig 3 to 4 inches of good quality compost into the top 3 to 8 inches of the soil which is the active root zone of most vegetables. Soil nutrients need to be replenished each year. One option is to have your soil tested and add only the nutrients that are needed. However, most home gardeners can simply add compost each year. Compost can be applied to the top of the soil at almost any thickness—but one or two inches is recommended.

Minimize soil disturbance. If you have heavy clay or sandy soil you may need to incorporate a large amount of compost. Or, a new in-ground vegetable bed may have significant challenges such as large rocks or tree roots. In these cases, you may need to till the area. However, once a planting bed is established, avoid over-tilling which destroys soil structure and may create a hardpan (a dense layer of soil that is largely impervious to water). Minimum soil disturbance improves water retention, supports a robust population of beneficial soil organisms and reduces the re-introduction of weed seeds from below.

Plant Seeds or Seedlings

Determine spacing. The Master Gardeners' [Vegetable Planting Summary](#) recommends spacing for each type of vegetable. Vegetables that will be harvested before maturity (as can be done for beets, carrots, lettuces and other salad greens), can be planted closer than the recommended distance.

You can isolate each kind of vegetable or save space by inter-planting crops that are ready to harvest early (radishes, spinach, lettuces) with crops that mature later. You can even plant vegetables among your ornamental plants—but be sure not to use toxic products around them.

It usually is convenient to plant in rows. Decide how many rows of each vegetable your beds will hold: use the recommended in-row spacing and determine how many plants will fit across the width of your bed. Some plants, like carrots, beets and lettuces, can be planted at the minimum recommended spacing all over the area allotted for them, instead of in rows.

If you like your rows to be straight, mark each row with string stretched between a pair of stakes. Mark the spacing between plants in a row. Use a tape measure or yard stick. Or, if you are using drip irrigation with regularly spaced emitters, use it as a ruler. Or use your own hand (stretch your fingers apart and measure the distance between the tips of your thumb and your little finger).

Plant. Use the recommended spacing for seedlings. For insurance when planting seeds, plant about twice as many as needed and remove the extra plants before they start to crowd one another. You can use scissors at the soil line so as not to disturb the roots of the seedlings selected to remain.

Plant at the recommended depth. For seeds, get the recommended depth from the seed package. In general, transplants should be planted somewhat deeper than they were in the container. Do not cover the crowns of plants like lettuces. You can plant tomatoes quite deep, so that only a few groups of leaves are above ground, and they will develop roots from the buried stem.

Grow

Provide supports as needed. Pole beans will need poles or trellises. Peas will need a pea net, teepee or fence on which to climb. Indeterminate tomatoes will need stakes or cages or other supports. See the Master Gardeners' [Vegetable Planting Summary](#) for recommendations for each type of vegetable.

Watering plants. Don't let your vegetable beds get too dry or too wet. Ideally, soil is kept moist in the area of the plants' active root zones. Always check soil moisture before watering. During Sonoma County's hottest months, you will need to replace about 1 inch of water per week due to soil evaporation and plant transpiration. Divide the plants' weekly watering needs into daily applications. If you are subject to watering restrictions, adjust the irrigation time on the days that you are allowed to water. For detailed information, see the UC Master Gardener Program of Sonoma County web page on [growing a thriving vegetable garden with less water](#).

Protect your plants. In addition to the vertebrate pests discussed earlier, you may need to protect tender seedlings from various insects. This may include using row covers, sticky tape, soap or horticultural oil sprays or other cultural, mechanical, environmental or biological methods to protect plants.

Thin if needed. If you planted seeds, you may have to remove some of the plants. You can eat the young salad greens, spinach, beets and radishes.

Control weeds. Weeds are easiest to remove when small; control them with frequent, shallow hoeing, particularly in the spring. A thick mulch of straw, compost or decaying leaves will help to control weeds and will retain moisture in the soil.

Examine your garden for problems regularly. Most problems are easier to handle if you catch them early. Treat the small problems before they become big ones. Well-grown plants resist insect pests and diseases the best. Learn to identify insect and plant disease damage. Avoid killing beneficial insects when trying to control those that are doing the damage.

If a plant doesn't look right to you but you don't know what's wrong, bring a sample of the affected part to the Master Gardener Information Desk. See the [UC Master Gardeners of Sonoma County website](#) for the phone number, street address and email address as well as instructions for bringing in a specimen. Or, ask a Master Gardener at your local farmers market, the Sonoma County Fair or other local events. Also, consult the [University of California Integrated Pest Management site](#) for detailed information.

Harvest

For the best taste, harvest your vegetables at their peak quality. While some fruits (like peppers and eggplants) can be left on the plant a bit longer once they reach full size, others (such as carrots and beets) may be a better quality when they are harvested small. Many crops (like green beans and cucumbers) require regular harvesting for the best production. If you let overlarge fruit stay on the plant, the plant may direct its energy to maturing the seeds in the overlarge and often woody fruit rather than forming more fruits. Refer to the Master Gardener's [Vegetable Planting Summary](#) and [Year-Round Food Gardening in Sonoma County](#) for help in determining the proper maturity of crops. Enjoy the fruits of your labor!