



Planning & Preparing YOUR VEGETABLE GARDEN SITE

N.S. Mansour

Home vegetable gardening continues to grow in popularity. Vegetables grown in the home garden are fresher, have better nutrient value, and cost less than vegetables sold in markets. Vegetable gardening also is an interesting hobby with the additional benefit of healthful outdoor exercise.

You'll need to remember several things, however, when you plan a vegetable garden for the biggest yields of high-quality vegetables. The information presented here is not intended to be all-inclusive, but it is intended to give you some basic ideas on how to organize and prepare a vegetable garden site.

Start with a plan!

To get the most from the space you allot to your garden, make a plan. Be sure to have it to scale—such as ¼ inch equals 1 foot. Then you can accurately plan space. Locate North on your plan as it relates to your garden spot.

Planning your garden can be an enjoyable task by the warmth of a fire on cold winter evenings. Take full advantage of garden references—seed catalogs, books, magazines, garden writers, and Oregon State University Extension Service publications. Keep in mind that soils and growing conditions vary widely around the state, so be cautious about using gardening information from different areas.

A well-planned garden is easier to plant and care for—and probably will be more productive—than one that is not well planned. Planning will help determine how much seed and how many transplants you'll need, when to plant the seed, and how far apart to place the rows.

By keeping the plan, you can keep notes on how things grow each year so that you won't repeat the same errors in the following year.

Try not to plant the same things in the same place each year because of disease buildup. Keeping your plan will help to avoid this problem.

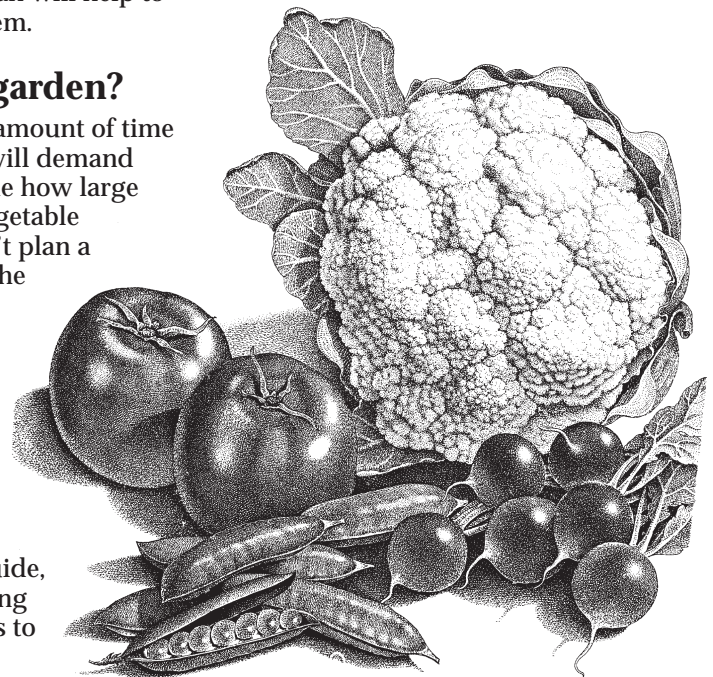
How big a garden?

Consider the amount of time that gardening will demand before you decide how large to make your vegetable garden. You can't plan a large garden in the enthusiasm of springtime and leave on an extended vacation, with expectations of a bountiful harvest on your return!

As a rough guide, figure on spending about 40 minutes to

spade a 10 x 10 foot area. Allow 15 minutes a week to plant and 30 minutes a week to cultivate an area this size. You'll also need 30 minutes for every water change when you irrigate.

Multiply these times by *nine* for a 30 x 30 foot garden. A well-planned and cared for 30 x 30 foot garden will yield enough produce for a family of four. If you also plan to can, freeze, or dehydrate your vegetables, you'll need a garden *twice* this size.



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Where do you plant it?

Although many gardeners have little choice, selecting a garden site is extremely important. Consider the following points.

Location. Put your garden near your house or on your daily route to and from home where it will be under daily surveillance. This way, you can spot problems with weeds, rodents, insects, and disease and take corrective measures.

The sight of the growing garden will give you a feeling of pleasure and satisfaction as you watch the vegetable seeds or transplants grow and produce. Harvesting vegetables at their peak of perfection is much more likely if the garden site is as close as possible to your home.

Sunlight. The prime garden area is where the vegetables will receive full sun throughout the day. Large trees or shrubs too close to the garden spot can shade your vegetables as well as rob them of much-needed nutrients and water.

At the absolute minimum, you must have half the available sunlight hours as direct sunlight on your garden. Lots of sunshine is particularly important for vegetables that form fruit, such as tomatoes, cucumbers, squash, eggplants, peppers, and melons.

Plant tall vegetables such as corn so that you'll minimize shading of lower growing plants.

Many leafy vegetables such as spinach and lettuce will grow well with less than full sunlight.

Air drainage. Proper air drainage is very important and often overlooked. Because cold air is heavier and denser than warm air, it flows like water down gullies and valleys. This cold air dams up behind obstacles and settles in low spots.

If possible, your garden should lie well up on a south-facing slope, to avoid frosts that form because of this cold night air drainage. Gardens located in low areas get all the late spring frosts and the earliest fall frosts and lose several weeks of growing time.

A cold-air barrier on the north side of your garden slope will divert draining cold air from your plants. This barrier also can hold solar-generated heat long into the chilly nights. The barrier can be as elaborate as a stone wall or as simple as a stack of hay bales.

Slope. Even if the slope is very steep, you still can have a productive garden. Some of the world's best gardens are terraced. Terraced gardens are attractive and easy to work. Horizontal beds decrease erosion, especially when the strips between each level are left in sod.

Wind protection. Cold winds that blow across the garden will chill the vegetable plants, slowing their growth. If the wind is strong enough, and the soil surface is unprotected, severe wind erosion can occur.

A windbreak to the side of the prevailing winds helps if your garden is exposed. Solid wall windbreaks are not good, for they create vicious downdrafts on the leeward side. It's better to have breaks that are 50 percent air-permeable.

An example is double rows of willow or deciduous hedges. Since living hedges take years to grow, a good short-term solution is a row of snow fencing placed near the border of your garden that receives the prevailing winds.

Precipitation and irrigation. In some areas, natural precipitation may be sufficient to produce many crops, especially for more drought-tolerant plants. Even in

these areas, supplemental irrigation can be beneficial or necessary for maximum garden production.

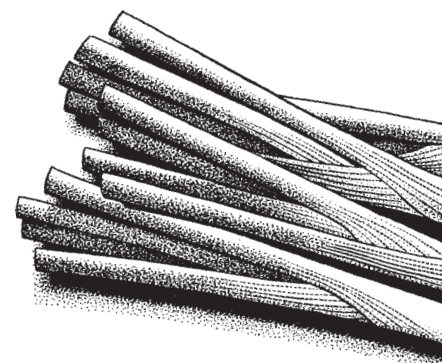
In most areas, however, irrigation is necessary for maximum garden production. If irrigation is necessary, make sure an adequate and dependable supply of water is available. If your water supply is limited, you may need to select drought-tolerant plants.

Irrigation water can be applied with sprinklers, drip irrigation, or through surface applications. Drip irrigation uses a system of plastic tubing with tiny holes that release water slowly for plants. Surface applications can be made in furrows or by flooding level areas or beds. If the garden area is sloping or rolling, sprinkler applications or drip irrigation probably are easier than surface applications.

Sprinkler irrigation makes more efficient use of water than surface irrigation, and drip irrigation is more efficient than sprinkler. Irrigation with furrows requires that furrows be within 12 to 18 inches of the plants so that water can move through the soil into the root zone of the plant.

If you use surface irrigation on sloping areas, make your furrows and your planting on the contour, to prevent erosion caused by water running down the slope in the furrows.

Drainage. If your garden is situated on a slope, drainage should be no problem. Avoid low, flat areas that flood or where water collects. Soils in these areas will remain cold in the spring, delaying plant growth.



Good soil. Good soil makes gardening easier and produces high yields. Many gardens are located on less than ideal soil. This is especially true if a garden is located near a house where construction of the house resulted in removal of the topsoil.

Soil texture is determined by the proportion of sand, silt, and clay particles comprising the soil. Sand particles are relatively large, forming large pores with little capacity to hold water and plant nutrients. Clay particles are extremely small and tend to cause soils to harden when dry and to become sticky when wet.

Clayey soils hold large amounts of water and plant nutrients but allow less movement of water and air through the soil into root zone.

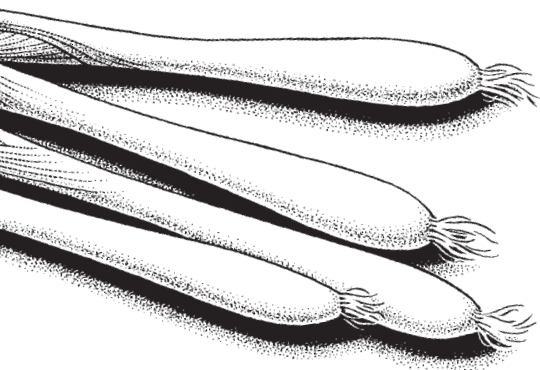
An ideal soil contains sufficient sand to keep the soil porous and sufficient clay to hold nutrients and water for plants' use. Thus, the ideal soil texture for a garden is a clay loam or a silt loam.

If your soil is too sandy to be ideal, you can add silt and clay soil material to improve the soil texture. If the soil is too clayey, add sand to improve the soil texture.

These additions, however, can be very expensive, especially if the garden is large, as several inches of material must be added to adequately change the soil texture.

For example, you'd have to mix 3 to 4 inches of sand with 6 to 7 inches of clayey garden soil, or 3 to 4 inches of silt and clay with 6 to 7 inches of sandy soil, to appreciably improve the soil texture.

Topsoil makes the best garden soil. Topsoil is the surface layer or layers of a soil that has been in place for many years. This is the portion of the soil in which plants



and other forms of life are most abundant.

As these organisms live and die, they add organic matter to soil. Organic matter improves soil tilth, waterholding capacity, and water and air movement, and it supplies plant nutrients.

Thus, the difference between the highly desirable *topsoil* and less desirable *subsoil* is organic matter. The use of organic materials such as animal manure, green plant materials, compost, peat moss, straw, bark, sawdust, and other materials is recommended.

If it isn't practical to add large amounts of sand to clayey soils or large amounts of silt and clay to sandy soils, you can "live with" these undesirable soil textures by adding large amounts of organic materials to the soil.

Keep in mind the topsoil took many years to form, so don't expect organic matter to correct the problem in 1 year. It probably will be necessary to repeat the application of organic material for several years in a row before a poor soil will be greatly improved.

Some organic materials, such as animal manure and green plant materials, supply plant nutrients, especially nitrogen, to the soil.

Green plant materials decompose or rot much more rapidly than materials such as straw, bark, or sawdust.

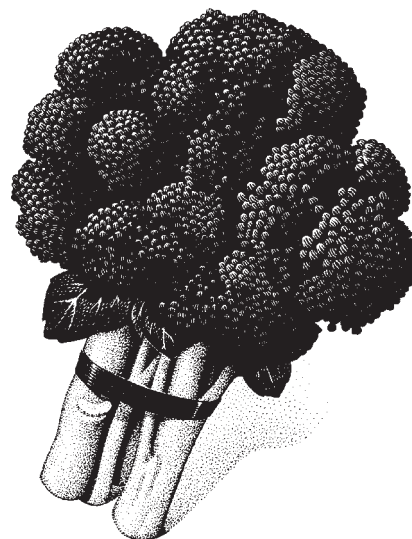
As a result, the slower-decomposing material will take longer to improve the soil but will provide a longer-lasting effect. Compost is an excellent organic material.

Organic materials that are low in nitrogen, such as straw and bark, will tie up nitrogen in the process of decomposing. This tieup of nitrogen depletes a nutrient that is necessary for plant growth.

Thus, when you add straw, bark, and sawdust, also add 3 to 4 pounds of nitrogen (9 to 12 pounds of 34-0-0, or 15 to 20 pounds of 21-0-0) for each cubic yard of material you apply.

Fertilizer

In addition to water, air, and sunshine, plants need nutrients. Nitrogen (N), phosphorus (P), potassium or potash (K), calcium



(Ca), magnesium (Mg), and sulfur (S) may be needed in large amounts.

Other elements are needed in small amounts—but they're no less important for good plant growth: zinc (Zn), copper (Cu), boron (B), iron (Fe), chlorine (Cl), molybdenum (Mo), and manganese (Mn).

The fact that all these nutrients are needed doesn't mean that you must add them to the soil each year. The soil has the capacity to store and release most of these nutrients as they are needed by the plants.

Therefore, you'll need to apply only the most heavily used nutrients—N, P, K, and S.

One pound of a preplant fertilizer (20-20-20, for example) for each 100 square feet is recommended. About midseason, side dress with 1½ oz of ammonium sulfate for each 10 feet of row.

You can base the amount of fertilizer you apply on a soil test report, if you wish.

Soil testing

You can use a soil test to evaluate the plant-nutrient levels in your soil, soil pH, and soil organic matter content. You can have a test done by a commercial soil-testing laboratory (your county Extension office has a list of labs). Cost varies with the number of elements tested.

There are small home kits available from garden supply stores, at various prices. However, your results will tend to be less accurate and less complete than the



report you'd receive from a soil-testing laboratory.

If your garden site is now supporting a healthy weed growth, it probably will support garden vegetables, too. In that case, you might find it less expensive—and just as effective—to skip the soil testing and to apply a complete fertilizer (N, P, K, and S).

Soil pH

A soil pH test is the one test that may be the most beneficial to the home gardener. Soil pH is an expression of the acidity or alkalinity of a soil. A pH of 7.0 is neutral. Most plants grow best at a pH of 5.5 to 7.5. A pH below 5.5 is too acid, and a pH above 8.2 is too alkaline for most garden plants.

You can correct a pH that's too acid (5.5 and below) by adding lime. Add it at the rate of 10 to 20 pounds of lime per 100 square feet (10 x 10 foot area). Mix the lime well into the top 6 to 9 inches of soil. The lime may take a year or more to react with the soil and correct the acidity problem.

Correct a pH that's too alkaline (above 8.2) by adding sulfur.

Preparing the seedbed

Till your soil when it's moist. You can plow it, rototill it, or simply spade it by hand. If your soil is too dry, it's difficult to work because it's hard and will form undesirable, large clods. When the soil is wet, it will be compacted,

and again it will tend to form large, hard clods when dry.

- *The higher the clay content*, the harder it is to obtain the right moisture content for the easy working that's necessary for a desirable seedbed.
- *The sandier the soil*, the fewer problems there will be with forming clods and soil compaction if you till when the soil is too wet or too dry.
- *The higher the organic matter content*, the easier it is to prepare a good seedbed.

Work the soil to a depth of 6 to 8 inches but be careful not to bring subsoil to the surface. You'll need to add all fertilizers except nitrogen and mix them with the soil during tilling.

After tilling, rake your garden several times in different directions while the soil is still soft and moist, until it forms a finely pulverized seedbed.

Above all, what you *don't* want is a cloddy seedbed—it provides poor contact between seeds and soil particles. The result is poor seed germination.

Remember: Patience in preparing your seedbed will pay off later in good seed germination and healthy, vigorously growing plants.

For more information

Eastern Oregon Vegetable Garden Guide, EC 1491 (Oregon State University, Corvallis, 1997). \$1.50

Fertilizing Your Garden, EC 1503 (Oregon State University, Corvallis, 1998). \$1.50

Growing Your Own, GROW (Oregon State University, Corvallis, revised 1991). No charge.

How to Take a Soil Sample. . . and Why, EC 628 (Oregon State University, Corvallis, revised 1995). No charge.

Planning a Home or Farm Vegetable Garden, EC 871 (Oregon State University, Corvallis, revised, 1992). 75¢

Raised Bed Gardening, FS 270 (Oregon State University, Corvallis, 1981). No charge.

Short Season Vegetable Garden, PNW 497 (University of Idaho, Moscow, 1997). \$2.00

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