



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

# Horticulture Study Guide for Beginners



## Your Vegetable Garden

Growing a vegetable garden is a healthy way to grow your own food.

### Your Garden Site

A garden plot should be in a place that is:

- away from trees
- where it will get at least eight (8) hours of sunlight each day.

### Preparing the Soil

It is important to properly prepare your garden for planting. A nice soft, smooth bed of dirt is best for a garden plot. Vegetable seeds grow better in well-prepared soil. Preparing the soil includes turning the soil with a spade, raking until there are no large dirt clumps, and incorporating compost.

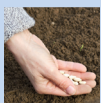
1. Work the soil down to a depth of 6 to 8 inches. Turn the soil over completely. Do not work the soil when it is wet because it may form big, hard, clumps of soil.
2. Spread a commercially mixed fertilizer over the soil, or use well-rotted manure, grass clippings, or old leaves. Fertilizer helps provide food for the young plants. Well-rotted and aged manure, grass clippings, or old leaves also provide food for plants as well as improves the soil. Be sure to incorporate it into the soil.
3. Rake and level the soil.

### Planting the Garden

Once the soil is prepped and you have determined what you will be planting in the garden, you are ready to plant. The type of plant you are growing determines how you plant the seeds. Traditionally, seeds are planted in straight rows to look neater, and it is easier to hoe the weeds. Tiny seeds need to be planted shallow (not too deep), because they don't have enough strength to push through a lot of soil. But if you plant the small seeds too shallow they may wash away with the first rain. Press down gently on the rows after you have covered the seeds with soil.



Use a string tied between two stakes to make a straight line. Make a trench along the string line for the seeds by using the edge of a hoe or a hand trowel.



For smaller seeds, tear off a corner of the seed packet. Scatter the seeds into the trench by tapping the packet with your finger. For large seeds, take seeds out of the packet and place each one in the trench. Cover seeds with soil and gently press.



Tomato and cabbage transplants should be planted up to the first leaf. Water the transplants well and keep as much soil from the container as possible with each transplant so the roots do not dry out. Leave a little ditch around each plant and water well.

## **Always wash your hands after planting seeds and seedlings.**

### **Watering**

All plants need moisture to grow and thrive. Some places do not get much rain and the garden plants will need to be watered often.

1. Using a watering can, gently sprinkle your garden with water each day until all the seeds have started growing. You need to be gentle because you don't want to wash all your seeds away! One way to make a watering can is by using an old clean plastic jug with holes punched in it.
2. Vegetable plants need 1 to 1 ½ inches of water per week. More water is needed if it is really hot, windy and dry. Use a trowel to check soil moisture at the 4 to 6 inch level near the row you have planted. If the soil at this level is dry, water is needed. If the soil is dripping, you have watered too much. If the soil is moist, it is just right!

### **Weed and Insect Control**

Weeds are plants in unwanted areas which compete with your plants for food, water and sun. Besides, they don't look very good in your garden. Never let weeds get big! They will make seeds and then there will be even more weeds in your garden next year. Always ask an adult for help in using a spray or powder to get rid of weeds, insects or diseases.

1. Pull weeds as soon as you see them. Plan to weed the garden about once a week.
2. Thin the plants by removing some of the young plants in the row. This gives the other plants room to grow. Check the seed packet for the right space between plants.
3. If insects or diseases show up in your garden, ask your parents or your 4-H club leader for help. Some insects are helpers (beneficial insects) and you want to keep them in your garden. Also, sometimes plants look like they have a disease, but some spots or brown leaves are not harmful.

Supplies and Equipment to care for your garden:

- Hoe
- Hand trowel
- Seeds and transplants
- Rake
- String
- Garden hose or watering can
- Spade or shovel
- Stakes, metal or wooden

Plant the seeds for these vegetables as soon as possible in the spring:

- Radishes
- Carrots
- Beets
- Leaf lettuce
- Peas

You can have fresh radishes and leaf lettuce again by planting more seeds in late summer. They will need a little extra watering.

When all danger of frost is past (late-May), plant these vegetables and fruits:

- Tomatoes
- Beans
- Squash
- Cucumbers
- Watermelon

**Roots:** Roots are important because they allow the plant to absorb water and nutrients from the soil that the plant uses to make food. Roots also hold the plant in the soil and prevent soil from washing away (eroding) during heavy rain. Roots may also store the energy the leaves make for the plant to use later.

**Uses:** Some examples of roots that people eat are carrots, beets, radishes, turnips, rutabagas, daikon, and parsnips.

**Leaves:** Leaves are where the plant makes food. This process of making food is called photosynthesis. To make food, leaves use the energy of the sun and combine it with carbon dioxide and water the roots pull from the ground to make food for the plant. The leaves take in the carbon dioxide through tiny openings on the underside of the leaf called stomata. The leaves also release oxygen through these same openings. This oxygen is what you and all animals breathe to stay alive.

**Uses:** Some examples of leaves that people eat are lettuce, cabbage, endive, kale, basil, and many other herbs.

**Stems:** Stems are where water and nutrients go up and down between the roots and the leaves. The stem also supports the plant, allowing it to grow taller. Sometimes the stem is called a shoot (See diagram 1).

**Uses:** Examples of stems that people eat are kohlrabi and asparagus. Potatoes and onions are modified stems that grow underground.

**Flowers:** Flowers are the beginning of a plant's seeds. Flowers provide food for bees and other insects. The bees and insects spread pollen from plant to plant. Pollen is the yellow dust inside flowers. Pollination is when pollen is spread from one flower to another to fertilize the seeds. If a flower is fertilized, it will make seeds that will grow into new plants.

**Uses:** Squash flowers can be stuffed and baked. Other flowers, like pansies and nasturtiums, can be eaten in salads. If you eat the flower it cannot make a fruit, so if you want fruit leave the flowers on the plant. Broccoli is another type of flower that we eat.

**Fruit:** After a flower is fertilized, a fruit may form. Fruit is the covering that protects the seed. Fruit also attracts animals. This is important because the animals carry the fruit away to eat it, helping spread the seeds. There are many different types of fruits from around the world.

**Uses:** Any part of the plant that contains seeds is a fruit. These include cucumbers, squash, apples, pears, cherries, lemons, and many more!

**Seeds:** The main purpose of seeds is to make new plants. Each seed contains a tiny plant, called an embryo that can grow into an entirely new adult plant. When a seed sprouts, it will grow a tiny root and one or two tiny leaves. The leaves and root will get a little energy from the seed, and then will start working just like an adult plant to make its own food.

**Uses:** Some of the seeds we eat are dried, like beans, rice, and barley. Some are ground into flour like wheat, or meal like corn. Others are immature, like green peas and sweet corn.

## **Glossary**

**Eroding:** to be gradually worn away by wind or water

**Photosynthesis:** a process by which green plants produce sugar from carbon dioxide and water, using energy from the sun.

**Carbon Dioxide:** a gas given off into the air by animals when they breathe. It is taken up by plants and used in photosynthesis.

**Stoma (plural: stomata):** a tiny hole in the outer layer of a plant leaf that controls the passing of water vapor, carbon dioxide, and oxygen.

**Oxygen:** a gas given off by plants during photosynthesis and used by animals when they breathe.

**Pollen:** a powdery substance produced by flowering plants that contains the male reproductive cells. It is carried by wind and insects to other plants, which it fertilizes.

**Pollination:** to transfer pollen grains from the male part of the plant to the female part of the plant. This leads to fertilization.

**Fertilization:** when female cells are united with male cells, enabling the development of a seed.

Youth may be quizzed on labeling this same picture of a tomato plant.

