



Chapter 2: **Getting started with healthy soil**

In this chapter, you will learn about preparing and building healthy soil, applying compost and fertilizer, and creating different types of garden beds.

Preparing the soil

Spring planting begins with the soil. Here, you will learn how to improve the condition of your soil, or its tilth. Soil that is “in good tilth” can support healthy plant life. It is loamy, easy to dig, readily soaks up and stores water, drains well, and makes a good seedbed.

Do not rush. It is tempting to get an early start on the spring garden, but digging the soil when it is wet can compact it. Wait until the moisture conditions are right. You will have a better chance of working your soil during the wet season in later years, once you have built up the soil with compost. Soil that contains a lot of compost is ready for planting earlier because it drains better.

To test your soil moisture, take a handful of soil and squeeze it. If it stays in a mud ball, sticks to your gardening tools, or looks shiny, it is too wet. If it is powdery and clumped, it is too dry. If it crumbles freely and feels like a wrung-out sponge, it is just right.

Remove overwintered materials.

If you planted a winter cover crop, you will need to cut it down and remove it or turn it under. Be sure to do this before the cover crop sets seed and at least two to four weeks before planting. If you covered your beds with mulch that has not decomposed over the winter, remove it before planting.

TOPICS IN THIS CHAPTER

Building healthy soil
Soil for container gardening
Composting
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Worksheet

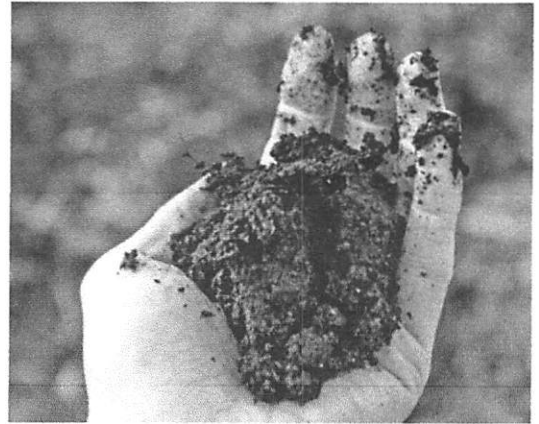


Building healthy soil

Healthy garden soil encourages healthy plant growth. Many problems in the home garden have nothing to do with disease or insects, but are the result of poor soil. You know the soil is poor if it is dried and cracked in summer, wet and puddled in winter, or hard to dig.

The ideal garden soil is described as loamy. Loamy soil forms into a ball and holds its shape when moist, but it crumbles easily when squeezed. It supports plant roots by providing them with both water and air. Loamy soil also drains well, which helps it warm up in spring so you can plant earlier.

Garden soil is made up of air, water, organic matter (decayed plant material), and particles of broken rock. Air and water sit in the empty spaces, or pore space, between the soil particles. Loamy soil is about 50% pore space. Water fills the small pores, and air fills the large pores. If the broken rock particles are mostly sand, the soil has large pores and holds lots of air but not much water. If the rock particles are mostly clay, the soil has



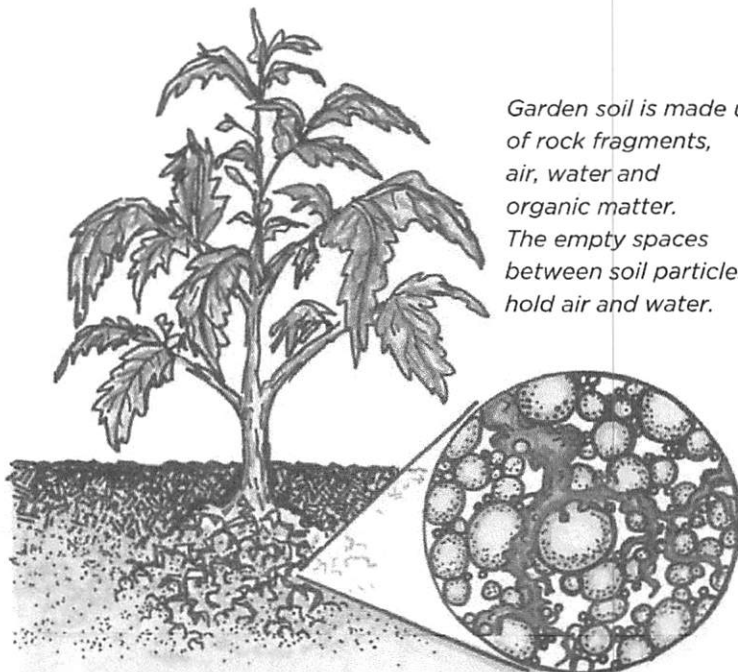
Healthy, "loamy" garden soil is loose and crumbly, but will form into a ball and hold its shape when moist.

small pores and holds lots of water but not much air. Plants and their roots need both water and air to grow.

Soil pores are the reason you should not step on the soil when you plant and take care of your garden. Compacted or flattened soil has small pores with little or no room for the air that plant roots need. It is a good idea to make permanent beds for your plants and permanent paths to walk in. That way, you can get around the garden and take care of your plants without crushing the soil pores.

TIP

To protect your soil, do not step or kneel in your garden beds. Instead, create permanent walking paths.



Garden soil is made up of rock fragments, air, water and organic matter. The empty spaces between soil particles hold air and water.

Organic matter makes up a very small part of healthy soil, but it is essential in a vegetable garden. Organic matter is anything that was once living and is now broken down in the soil. In nature, soil microorganisms and earthworms break down, or decompose, raw organic materials like fallen leaves, plant trimmings, and food scraps until they cannot be broken down any more. You can then add this decomposed organic matter to your garden beds as compost. Planting in raw organic material can harm

your plants, so the material must first decompose, or turn into compost, before you add it to your garden beds.

Soil for container gardening

When plants are growing in the ground, their roots bring up nutrients from the subsoil. Plants are also surrounded by critters that digest coarse matter and make nutrients available. This can't happen in containers, so the growing medium needs to be nutrient rich. This may seem high maintenance, but remember – you're growing food above cement instead of in the ground.

It's not a good idea to use garden soil as a planting medium for containers, as it can't maintain its health and tends to compact too quickly. You can get potting mixes from nurseries that work great. Some contain pasteurized soil, others are soilless. Both contain additives that keep the soil aerated, help to retain nutrients, and allow for rapid drainage while still retaining moisture. Potting soil is "sterile" and will not contain weed seeds or diseases. You can also make your own potting soil from equal parts sand or perlite, loamy garden soil, and peat moss or coconut pith. Depending on your circumstances, this may be cheaper for you.

If your container garden is going to be on a rooftop or balcony, you should consider the more lightweight soilless potting mix if you are concerned about the weight you're adding to the container. You'll have to fertilize more, however, as these soilless mixtures cannot retain nutrients as well as mixes containing soil.

Make sure that the planting medium drains rapidly, but also retains enough moisture to keep the roots evenly moist. Line the base of the pot with newspaper to prevent soil loss (don't put rocks in the bottom of the pot).



Composting

Good soil naturally contains a small amount of organic matter. Adding compost to your garden beds every year will increase the amount of organic matter in the soil and make it better for growing vegetables.

You can make compost yourself or you can buy it already made. If you make compost yourself, you can make it in bins or piles and then move the finished compost into your garden beds. You can also make compost directly in your garden beds and wait until it has decomposed before planting.

There are many good reasons to add compost to your garden beds. When you work compost into the beds, the soil can absorb moisture better and hold onto it longer. Moisture evaporates from bare soil, so spreading a layer of compost as *mulch* on top of the soil during the dry season helps the soil hold onto moisture. That means you do not have to water the garden as often.

Soil that has been improved with compost contains earthworms and many types of soil microorganisms such as beneficial bacteria and fungi. The earthworms tunnel through the soil, forming air passages. The earthworms and microorganisms also break down organic matter into nutrients that plants use. As you add compost over time, these microorganisms supply more of the

Compost-rich soil contains earthworms and microorganisms, which supply nutrients to your plants so you use less fertilizer.



This compost system is made from old wooden pallets. It has an open top and bottom, and removable front panels. Turn your pile once a month, mixing the materials as you go. When your compost is ready to use, it will look like garden soil.



Spreading fresh grass clippings in between established plants can protect soil organisms from direct sun exposure and keep soil moist. This reduces the need for watering and provides a slow release of nutrients. For more on "composting in place," see the sheet mulching section on pages 43 and 44.

nutrients your plants need so you can use less fertilizer.

Compost also helps to protect the environment. Soil improved with compost acts like a sponge, so more water stays in the soil and less water runs off the surface. When water runs off, nutrients from fertilizer are carried away into the ground water and nearby rivers and lakes, where they can be harmful. With less runoff, the soil holds onto nutrients right where plants can use them.

Making compost

When you make your own compost, you save money and recycle nutrients back into your garden. You can build your own compost system or buy pre-made bins.

Building your bins. To make your own compost system, begin by building two bins next to each other. You can make them from wooden pallets, wire fencing, cement blocks, or old boards. The bins should be at least three feet wide by three feet deep by three feet high, but it is okay if they are bigger than that. Leave the top and bottom of each bin open, and make one side removable so that you can easily reach inside the bin. If you do not have materials to build a bin, you can make a free-standing compost pile instead. If you plan to add large amounts of kitchen scraps to your pile, you might need to rodent-proof your bins by lining them with metal mesh. Some pre-made bins are already rodent proof.

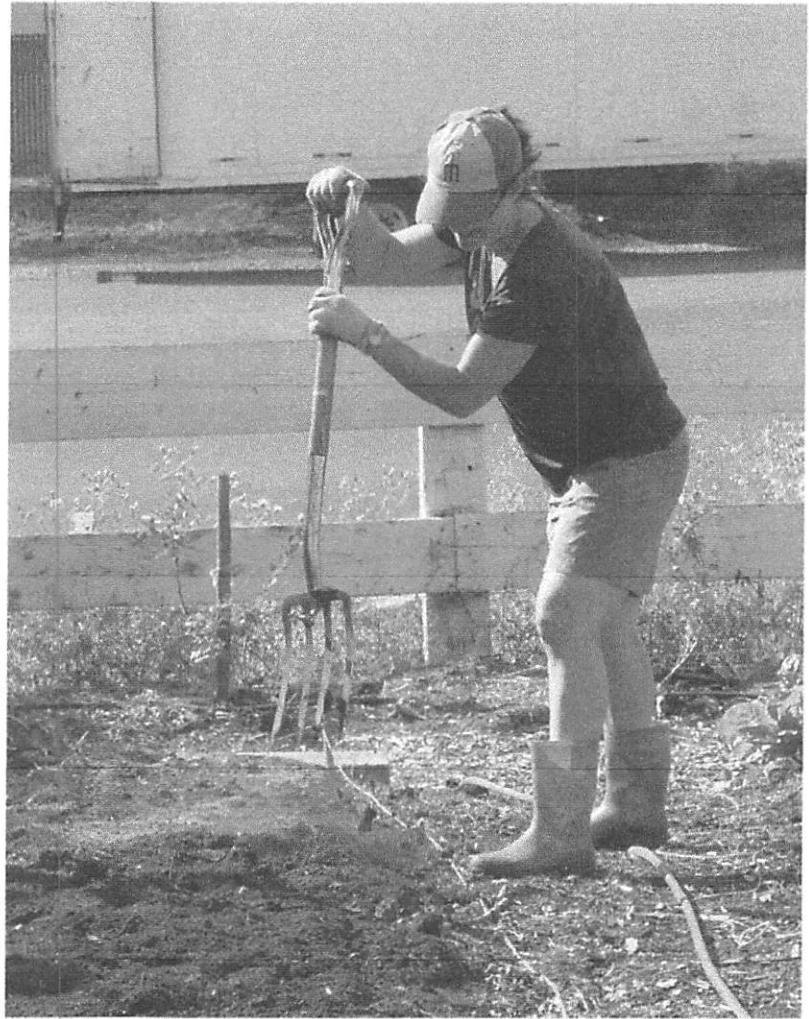
Making your pile. Starting at the bottom of the pile, add brown and green materials in alternating six-inch layers. "Brown" materials, like shredded newspaper and raked leaves, are dry and high in carbon. "Green" materials, like



What to put in your compost pile	
Brown layers <i>(high in carbon)</i>	Green layers <i>(high in nitrogen)</i>
Dry leaves	Garden waste
Straw	Kitchen scraps
Sawdust	Coffee grounds
Torn paper bags	Grass clippings
Dry corn husks	Pet hair
Shredded newspaper	Composted manure
NO: Meat, dairy, bones, diseased plants, weeds, or poop from people or meat-eating animals like dogs or cats.	

garden scraps and grass clippings, are wet and high in nitrogen. See the “what to put in your compost pile” chart above for a list of brown and green materials. Compost piles that have both brown and green materials decompose faster. The materials also break down faster if they are chopped into small pieces. You can add one cup of high-nitrogen fertilizer like linseed meal or blood meal every few layers to speed up decomposition.

Continue to add layers until your bin is full (about three feet tall for a free-standing pile), or until you run out of material. If it is dry outside, water your pile occasionally to keep it damp, like a wrung-out sponge. If it is raining, cover



Work compost into the soil with a digging fork.

your pile with a plastic sheet.

Let your compost pile sit for a week or two, then fork the materials from the first bin into the second bin. If you created a free-standing pile, fork the materials into an empty spot on the ground. Mix up the materials as you go, then water the pile. Turn the pile once a month until you cannot recognize the original materials anymore. Total time may vary because decomposition happens faster in summer

How much compost do I need in order to add a two-inch layer to my garden space?		
Plot size	Square feet	Amount of compost
4' x 8'	32 square feet	5.4 cubic feet
10' x 10'	100 square feet	16.2 cubic feet
20' x 20'	400 square feet	67.5 cubic feet



than in winter. When your pile looks like garden soil, it is ready to use.

Adding compost

Your garden uses up compost each growing season, so you need to add more every year. You can add finished compost or you can “compost in place,” which means building compost piles directly in your beds.

Adding finished compost.

Add two to six inches of finished compost to your garden beds each year. The chart on the previous page lists the amount of compost needed for different plot sizes. Finished compost has already broken down, so you can add it to your garden beds at any time and you do not have to wait to plant. You can make your own compost, or you can buy finished compost in bags or bulk.

When you are ready to plant, first add the compost to the soil using a digging fork or shovel. If your soil is heavy with clay, you may need to dig and mix in your compost. If your soil is already loose and loamy, you can use a digging fork to wiggle in new compost without mixing.

For perennial crops like asparagus, artichokes, and berries, you can spread two inches of compost on top of the soil each year without mixing it in.

To save time and energy, you can add fertilizer along with the compost and mix them in together. See “how to apply fertilizer” on pages 39-40.

Composting in place. This kind of composting is also called “sheet mulching” or “lasagna gardening.” It is a method for improving soil by building a compost pile directly in a garden bed.

To learn how to compost in place, see “Method 2: Sheet mulching” on pages 43-44.



The three numbers on the label of a bagged fertilizer mix tell you the percentages of available nitrogen (N), phosphorus (P), and potassium (K) contained in the product.

Fertilizing

You can help your soil hold onto nutrients with good gardening practices, but vegetable gardens need extra nutrients every year. Giving plants the right amount of nutrients at the right time is key to growing a successful garden.

Plants need 16 nutrients. Nitrogen, phosphorus, and potassium are important nutrients that are found in most fertilizer mixes. Plants need them in larger amounts than other nutrients. Plants need much smaller amounts of the other 13 nutrients, or micronutrients.

The three numbers on a fertilizer label tell you the percentages of available nitrogen (N), phosphorus (P), and potassium (K) in the product. For example, a fertilizer labeled 15-5-10 contains 15% nitrogen, 5% phosphorus, and 10% potassium.

For the first two or three years of a new garden bed, a balanced fertilizer is fine. It contains N, P, and K in the same amounts, such as 10-10-10.

Soil testing

Consider testing your soil when you are starting a new garden. A soil test can measure your soil's pH and the amounts of N, P, K, and other nutrients in your soil before you begin planting.

Testing soil's pH. The pH number tells you how acidic or alkaline your soil is. Vegetable gardens are most productive when the soil is slightly acidic, between pH 6.0 and 7.0. If a soil test shows that your soil pH is lower than 6.0 (too acidic), then some nutrients will be less available to your plants. You can raise the pH by adding agricultural lime, which will also add calcium to the soil. In general, apply five pounds of agricultural lime per 100 square feet of growing area. You might need to add more lime if your soil pH is especially low. If you live in an area with alkaline soils, talk to your local Master Gardeners about ways to acidify your soil.

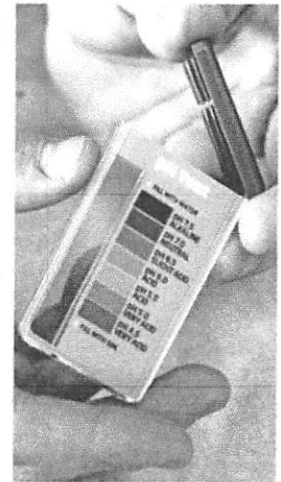
Testing soil's N-P-K. If you have added a balanced fertilizer for several years, enough phosphorus and potassium may already be in your soil. These nutrients move through the soil slowly. On the other hand, nitrogen leaches out of the soil quickly with too much watering or heavy rainfall. You may want to have your soil tested every three to five years to see if you need to supply any nutrients other than nitrogen.

Organic and chemical fertilizers

You can grow a successful garden using either organic or chemical fertilizer. Each has advantages and disadvantages. Look at the comparison chart below and decide which type of fertilizer you want to use. You might base your decision on the needs of your plants, how much you want to spend, the materials that are available to you, or your personal values.

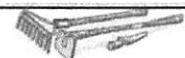
How to apply fertilizer

There are several ways to apply fertilizer. The method you choose depends on the kind of fertilizer you have and when you are using it. For a homemade organic fertilizer, you can broadcast, band, side-



Measure pH at home with a home soil test.

Organic and chemical fertilizer comparison	
Organic fertilizers	Chemical fertilizers
Organic fertilizers, such as seed meal, bone meal, and kelp, come directly from plant or animal sources. They are sold on their own and in pre-packaged complete mixes.	Chemical fertilizers (also called "commercial," "synthetic," or "conventional" fertilizers) are manufactured in a chemical process. They are sold as pre-packaged complete mixes.
<p>Advantages:</p> <ul style="list-style-type: none"> • Support soil microorganisms, which are good for long-term soil health and tilth • Contain micronutrients essential to plant health • Release nutrients more slowly, so more nutrients stay in the soil instead of washing into groundwater and damaging the environment • Slower release also means less chance of damage to plants <p>Disadvantages:</p> <ul style="list-style-type: none"> • Nutrients are in a form that must be broken down by soil microorganisms, which means nutrients are not immediately available for plant use • Microorganisms are less active in cool temperatures, which slows the release of the nutrients • Sometimes more expensive in the short run 	<p>Advantages:</p> <ul style="list-style-type: none"> • Made to be water-soluble, so nutrients are immediately available to plants after the fertilizer is watered in • Sometimes less expensive in the short run <p>Disadvantages:</p> <ul style="list-style-type: none"> • Usually supply only N, P, and K, with micronutrients missing • Do not supply organic matter • Unless the formula is time-released, nitrogen leaves the soil quickly • Many chemical fertilizers are concentrated and very water-soluble, so it is easier to apply too much and damage plants



To broadcast fertilizer, scatter it on top of soil, like sprinkling cinnamon-sugar on toast.



dress, or place a quarter cup of it “in the hole.” For a pre-mixed or liquid fertilizer, be sure to read the instructions on the container before using it.

Broadcast. Scatter the fertilizer over the surface, just like sprinkling cinnamon-sugar on toast. Then work it into the soil with a shovel, digging fork, or rake. To save time and labor, add the fertilizer and compost at the same time in spring, then mix them into the soil together.

Band. Use the corner of a hoe to dig a trench about three inches deep, and sprinkle fertilizer in the trench. Cover the trench with soil, then sow seeds one and a half to two inches above and to the side

of the filled trench. As the seeds germinate, the plant roots will grow downward into the fertilizer and absorb the nutrients. Banding is also a good way to fertilize a row of transplants or to add fertilizer to plants that are already growing.

Side-dress. Scatter the fertilizer on the surface of the soil, close to growing plants. Keep the fertilizer off leaves to prevent burning. Lightly scratch it into the top inch of garden soil with your gloved fingers or a hand cultivator, taking care to avoid plant roots. Water the fertilizer in so the plants can absorb the nutrients.

Side-dress when you need to give plants extra nutrients during the growing season.

“In the hole.” Use this method when you are transplanting vegetables into the garden. Put a small scoop of fertilizer in each planting hole and mix it into the soil at the bottom of the hole. For homemade organic fertilizers, put a quarter cup of it in the hole. For pre-mixed fertilizers, check the instructions on the container.

When to apply fertilizer

Fertilize before you sow seeds or transplant starts. The timing depends on the type of fertilizer you are using.

When to apply organic fertilizer. In the first year of a new garden, fertilize about

Nutrient content of organic fertilizer

	% Nitrogen (N)	% Phosphorus (P)	% Potassium (K)
Cottonseed meal	6-7	2	1
Blood meal	12-15	1	1
Bat Guano	10	3	1
Fish meal	10	4	0
Fish emulsion	3-5	1	1
Bone meal	1-4	12-24	0
Rock Phosphate	0	25-30	0
Greensand	0	0	3-7
Kelp meal	1	0.1	2-5

a month before you sow seeds or transplant in spring. This gives the soil microorganisms time to break down the fertilizer into a form that the plants can use. After a season or two of organic gardening, you will be able to fertilize at planting time without needing to wait. For “in the hole” fertilizer applications, fertilize when you transplant your starts.

When to apply chemical fertilizer. If you choose to use a chemical fertilizer, follow the directions on the package.

Fertilizing during the growing season

Plants need nitrogen for healthy growth. If your plants look pale green or yellow and their growth slows down about four to five weeks after planting, they may need more nitrogen. Side-dress a small amount of quick-release nitrogen fertilizer, like fish fertilizer, and then water the plants. Do not give extra nitrogen to plants grown for their fruits, like tomatoes, cucumbers, squash, and peas. That extra dose of nitrogen can make these plants produce only leaves and no fruit.

Fertilizing with containers

Containers also lose nutrients quickly. Liquid fish emulsion or liquid seaweed are good fertilizers for container gardens.

Follow the instructions on the container for the amount to use. Containers should be fertilized once a week after the plant is firmly established. This might seem like a lot, but it’s one of the things we do to make up for the fact that the plants are growing in places besides the actual ground.

Making garden beds

Garden size

How big should your garden be? That depends on your answers to these questions:

Why are you gardening? Are you gardening to feed yourself? Your family? Your community? Will your garden also be a play space for your children, grandchildren, or pets?

Who will do the work? Will the garden be a group project, with family members or friends helping out? Or will it just be you?

How much time do you have to spend gardening? Be honest with yourself about how much time you can spend in the garden.

How much room do you have? If you have a large area for gardening, you might feel like you need to grow a large



A raised bed is any garden bed raised above the ground. Make beds three to four feet wide, with paths between 18 and 36 inches wide.



garden. However, a small, weed-free garden produces more and will give you more pleasure than a big, weedy mess. If you find that you have the time and energy for a larger garden, you can always make your garden bigger next year.

As you design your garden, make sure you can work in your beds without stepping on and compacting the soil. Build your beds so that you can easily reach the middle from the paths on both sides of the bed. Beds are usually three to four feet wide, and can be as long as your space allows. If you have several beds, separate them with paths. You will need at least 18 inches for a footpath and 24 to 36 inches for a wheelbarrow or garden cart.

Raised beds

A raised bed is any garden bed that is raised above the ground. Raised beds help you avoid stepping on the soil and compacting it. They help you focus on the areas where plants will be growing, so they help you save on fertilizer, compost, water, and your own time and labor. Raised beds also drain well and warm up sooner in spring so you can plant earlier.



Raised beds can help you avoid stepping on your garden soil.

Some raised beds have retaining walls, and some do not. Retaining walls can help to hold the soil in place, but they are expensive and usually unnecessary. They also create hiding places for slugs and other pests. Retaining walls are useful if you want to create beds with special shapes, use narrower paths, or make it easier for people with limited mobility to reach the beds. If you choose to build retaining walls, you can use concrete blocks, rocks, or boards (but not pressure-treated boards manufactured before 2002 or boards that could have lead paint on them).

Method 1:

Making a basic raised bed

This is an easy way to start a new bed.

Step 1: If the soil is compacted, loosen it two to three inches deep with a shovel or digging fork. Do not rush this step. Wait until the soil is dry enough to crumble when you loosen it.

Step 2: Spread about two inches of finished compost in a layer over the soil. The chart on page 37 lists the amount of compost needed for different plot sizes.

Step 3: If you plan to use an organic fertilizer, add it now. Broadcast it, meaning scatter it evenly, over the layer of compost like cinnamon-sugar on toast.

Step 4: With a shovel or digging fork, dig the compost into the soil to about six inches deep. You can also use a tiller.

Step 5: Make 36- to 48-inch-wide beds by shoveling paths between the beds. Make each path 18 to 36 inches wide and six inches deep. Add the shoveled soil to the top of the beds. You now have a soil and compost mixture about eight inches deep.

Step 6: Rake the beds level. The slope of the soil at the edges will leave about 36 inches of flat planting space on top of each 48-inch-wide bed.

Once you finish shaping the beds, walk only in the paths. Add sawdust, fallen leaves, wood chips, bark, or straw on top of the paths to reduce mud and smother weeds.

Method 2: Sheet mulching

Sheet mulching turns raw organic material like grass clippings, fallen leaves, and vegetable scraps into planting soil. It is also called “composting in place” or “lasagna gardening.”

Like other compost piles, sheet-mulched beds need dry, brown, carbon-rich materials and green, wet, nitrogen-rich materials placed in layers. The “What to put in your compost pile” chart on page 37 lists different kinds of brown and green materials that you can use. Small amounts of nitrogen fertilizer like linseed meal or fish fertilizer can help sheet-mulched beds turn into garden soil faster.

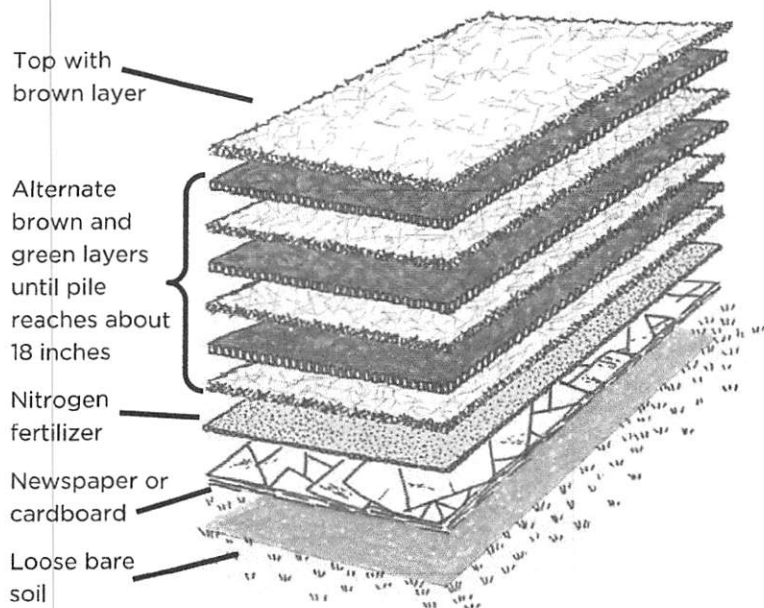
Begin sheet mulching in your bed several months before you want to plant. Fall is a great time to sheet mulch, because the material will break down slowly over winter and will be ready for planting in spring.

Step 1: Begin by mowing or trimming grass or other vegetation as low as you can in the area where you plan to make your bed. Next, mark off your new garden bed with stakes and twine.

Step 2: Loosen the soil in the bed to several inches deep with a digging fork to make sure there is good drainage.

Step 3: Remove weeds from the bed and put them in your green waste bin or garbage bin. (For more on weeding, see Chapter 5.)

Step 4: Cover the bed with four to six overlapping layers of newspaper or cardboard to smother the grass and



Sheet mulching turns raw organic material, like grass clippings, leaves, and vegetable scraps, into planting soil.

weeds. The newspaper or cardboard will break down and become part of the soil.

Step 5: Soak the newspaper or cardboard. Then cover it with a thin layer of nitrogen fertilizer like linseed meal.

Step 6: Top the nitrogen fertilizer with one to five inches of brown material like dead leaves, straw, or shredded newspaper. Make sure that the material is loose and not clumped together.

Step 7: Add one to five inches of green material like kitchen scraps, green yard waste, coffee grounds, or composted manure. (The brown and green layers should be the same thickness.)

Step 8: Continue to add alternating layers of brown and green materials until you reach a final height of about 18 inches. Sprinkle a little nitrogen fertilizer every four layers or so to speed up the composting.

Step 9: As you collect more materials, you can add more alternating layers of





Top your sheet mulched beds with a layer of brown material like straw or burlap. This acts like a "blanket" to protect the beds and keep them tidy.

brown and green up to the height you want for your bed. Keep in mind that taller beds take longer to break down into garden soil. When you add more layers, always end with a brown layer. This top layer is the "blanket" that keeps flies away. You can also cover the top layer with burlap sacks to keep the pile neat and in place. Remove the burlap at planting time.

If a pile gets too wet, cover it with a sheet of black plastic. Keep the plastic in place with bricks at each corner. The plastic will help to warm the pile so it breaks down faster. It will also help keep nutrients from leaching through the soil and past the plant roots during the rainy season.

Sheet mulching is a slow process. A sheet-mulched bed may take six months to become ready for planting. A bed is "finished" when the green and brown layers have broken down and you can no longer recognize what they were. The pile should look and smell like fresh earth.

In future years, when you are composting in an existing bed and not making a new bed, you will need only a couple of green and brown layers.

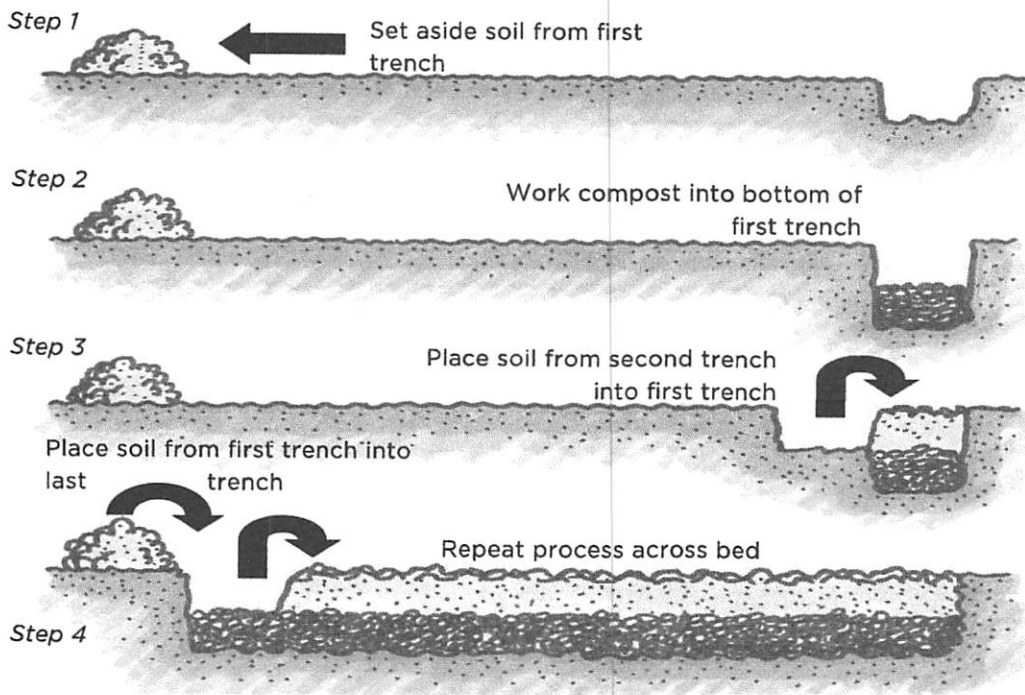
Method 3: Double digging

Double digging turns heavy, compacted soil into a bed that is ready for planting right away. However, it is hard work and time-consuming. As described on the next page, use a long-handled square shovel to dig efficiently and protect your back. Use a digging fork to loosen the soil.

Step 1: Dig a trench (one foot wide by one foot deep) at one end of the bed, and put the soil you dug up into a garden cart or wheelbarrow or set it aside.

Step 2: Lay two to four inches of compost in the bottom of the trench, and break up compacted soil in the trench. To do this, push a shovel or digging fork into the soil, and wiggle it back and forth.

Step 3: Dig a second trench next to the first trench, and put the soil from the second trench on top of the compost in the first trench (grass-side down). Lay two to four inches of compost in the bottom of the second trench, and mix as in Step 2.



Double digging is a way to build a good garden bed in heavy, compacted soil.

Step 4: Repeat Step 3 until you finish the whole length of the bed. Mix the soil you dug up from the first trench with compost before returning it to the bed. The loosened soil and all the compost you added will raise the level of the bed.

The no-dig method is a quick and easy way to build a garden bed, but can be more expensive than other methods.

Method 4:

The no-dig method

The no-dig method is a quick and easy way to build a bed that is ready for planting right away. But it can be more expensive because you need to start with a pre-made planting mix.

Step 1: Clear the area of weeds. Then put down layers of cardboard or newspaper to smother grass and weeds and keep them from growing up into your bed. Soak this material.

Step 2: Mound four to eight inches of pre-made planting soil over the cardboard or newspaper. If your bed is shallow, you can plant shallow-rooted crops like lettuce and spinach to start with. As you add compost in the future, your bed will become part of the soil below and you will be able to plant crops that have deeper roots.



Courtesy of RosemaryOnTheTV.com



Worksheet: Getting started with healthy soil

Define: Vocabulary words for the week

Spend time as a group defining these gardening terms:

pH test:

Sand:

Compost:

Silt:

Fertilizer:

Greens:

Clay:

Browns:

Loam:

Reflection:

Do you have a memory of playing in the dirt when you were younger?

Do you feel differently about dirt now?

Class activity: Soil

Use a soil sample that you brought from home.

1. Describe your soil's characteristics.

Things to look for: color, smell, texture, moisture, bugs or worms, plant debris

2. What are some of the main components of healthy soil?

3. What is organic matter?



Class activity: pH *Reference page 39*

Take the pH of the soil samples in class, and discuss what that means for plant health.

1. What do the numbers mean?

2. What does it mean when the soil is too acidic? How do you fix that?

3. What does it mean when the soil is too alkaline? How do you fix that?

Review: Container soil

What are some different ways to care for container soil and garden soil?

Class activity: Compost *Reference pages 35-38*

Work in pairs:

1. What are the main components of compost?

2. Create a list of the materials you can use to make compost at home. Discuss if they would go in the green or brown category, and why.

Greens	Browns

3. Do you compost? If so, do you have any tips for the class or did you get any tips from the class?



Review: Fertilizer *Reference pages 38-41*

1. Choose a specific fertilizer to look at it. What are the ingredients? What are the quantities of N-P-K?

In general, when using fertilizers:

2. Where do you put it?

3. When do you use it?

4. Why do you use it?

Class activity: Container depth

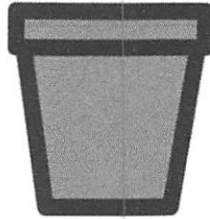
Reference pages 15-16

For each size of container, write a list of vegetables that can grow in that size pot.

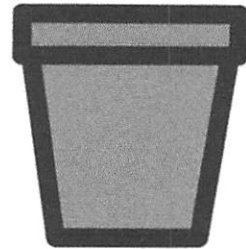
6 in. deep



8 in. deep



10 in. deep



3 gallon pot



5 gallon pot





Wrap Up for Week 2:

1. What are three things that you took away from this class?

2. What are some things that are still confusing?

Getting ready for next week:

- Bring in a container, or take a picture of a container garden that you have seen.