# CHAPTER 5

## Preparing for Gardening

With planning in place, you are ready to focus on the "hows" of the garden. At KidsGardening we recognize that many educators who want to start gardens are beginner gardeners themselves. Keeping that in mind, the next three chapters are devoted to providing you with gardening basics, delivered succinctly, and with the goal of helping you have the most success in your gardening endeavors as possible. We have included answers to some of our audience's most frequently asked gardening questions, along with special tips we've gathered over the years.

In this chapter you will find answers to the questions:

- How do we prepare the soil for planting?
- How do we choose what to grow?
- When should we plant?

## Preparing a New Garden Bed

What is the secret to a bountiful garden? Excellent soil. In addition to anchoring roots, soil provides life-sustaining water and nutrients. Plants in poor soils will struggle to grow, even if optimal water and light are available. In contrast, plants in good soils will grow stronger and experience fewer problems with insects and diseases. For more information on soil preparation and testing, see Chapter 4 on Garden Planning and Design.

### Preparing Soil for New In-Ground Garden Beds

Here are the basic steps for preparing a new in-ground garden bed that is currently covered in sod.

#### Step 1: Mark the Bed's Perimeter

Stakes and string work well to mark off areas with straight sides. For curved beds, use a garden hose to lay out the bed's perimeter or sprinkle some ground limestone on the sod to mark the area to be planted. Test soil as mentioned in Chapter 4: Garden Planning and Design.

#### Step 2: Deal with the Sod/Weeds

You'll need to kill or remove the existing plant growth — usually grass and/or weeds. Here are three options: smothering sod, removing it, or rototilling.

**A. Smother the sod** (should be done at least one season before planting). With some advance planning, you can avoid a lot of hard labor by covering the sod to smother it. Excluding light will kill the grass; it will then decompose in place. This method is ideal because it preserves the soil structure and prevents harm to beneficial soil life. Note, however, that smothering sod may not work well for all types of grasses and weeds.

Start the process the summer or fall before you plan to plant. First, do a soil test so you know if you need to add any amendments.

Begin by mowing the grass as short as possible. If your soil test recommends amendments to adjust pH or nutrients, spread them over the mown grass. Next, spread a 2-inch-thick layer of compost over your future garden area. Cover the compost completely with 6 to 8 thicknesses of newspaper, wetting them down as you go. Finally, cover the newspaper with a thick layer of organic mulch such as weed-free straw, grass clippings, chopped leaves, or more compost. Water the area lightly, repeating periodically if the weather is dry.

By the following spring, the sod and newspaper will have decomposed, adding organic matter to the soil. Simply pull back the top layer of mulch when it's time to plant – there's no need to till the soil. Earthworms and other soil critters will have incorporated the organic matter and amendments into the soil.

**B. Remove the sod.** To prepare the bed and plant it in the same season, you'll need to remove the sod. If you are willing and able to do some pretty hard labor, you can skim off the sod by hand using a spade. Or you can use machines to make the job a little easier.

**Spade.** To remove sod by hand, use a sharp spade to cut down through the sod, dividing it into 1-foot by 3-foot sections. Then slide the blade of the spade into the soil at a shallow angle, beginning on one of the shorter sides. Your goal is to slice off the roots of the sod just an inch or two under the soil surface. Use the blade of the spade to lift and roll up each section of sod as it is cut free, placing the sections on a sturdy tarp or in a wheelbarrow or garden cart as you go. Drag or wheel these pieces of sod to an out-of-the-way corner; stack them upside down and let them decompose to make compost. Removing the sod like this will also remove some of the topsoil as well, so replenish the bed with some compost and possibly additional topsoil before planting.

**Machine.** A power sod cutter makes much quicker work of sod removal than hand labor. This machine can be rented, if you are comfortable operating one and have the means to transport it, or you can hire a landscaping company to do the job. As with hand removal, some of the topsoil will come off with the sod, so be sure to add some compost to the bed and additional topsoil if needed.

Use a garden fork to loosen the top few inches of soil, and then mix in some compost and any needed soil amendments. Gently loosening the soil by hand is ideal because it protects the soil structure and ecosystem. However, this method may not be practical for large garden areas or areas where the soil is compacted. In these cases, you'll need to literally dig in by turning over the soil by hand or with a tiller.

**C. Rototill.** You can also deal with the sod by chopping it up with a rototiller. You can either rent one for DIY or hire a landscaper to do the job. You'll need a rear-tined machine with a fair amount of horsepower to cut through established sod, and you'll need to make several passes with the tiller. After each pass, walk through the bed and pick out chunks of sod, shaking them to remove as much soil as possible. Then pile the chunks in an out-of-the-way place and allow it to decompose to make compost.

While rototilling will leave more of the site's original topsoil and organic matter in place than stripping the sod, it's also likely to leave you with a bigger weed problem. Try to remove the roots of perennial weeds like quackgrass by hand before tilling, since each section of root chopped up by the tiller can result in a new plant. And no matter how diligent you are in removing chunks of sod, some grass roots will remain that will need to be pulled as they sprout.

Note that, although it fluffs up the soil for easier planting, tilling isn't ideal because it damages soil structure by breaking up the soil aggregates that benefit the soil ecosystem.

**"The garden program really united students. It didn't matter that they came from different areas or that their skin color was different; everyone's hands were the same color — dirty!"**

**— MELISSA VANEK**
**HOLCOMB FARM LEARNING CENTERS, CT**

If you plan to strip the sod or rototill, try to do this soil preparation at least a month before you intend to plant to allow any remaining vegetation to break down and give annual weeds a chance to sprout. When these weeds are only about an inch tall, cultivate with a hoe to kill them before planting time. This will help to reduce the number of weeds sprouting in your garden after it's planted. Following your soil test recommendations, this is also the time to add lime to raise pH or sulfur to lower it, and fertilizer to correct any nutrient imbalances.

### Step 3: Prepare In-Ground Beds for Planting

When it's time to begin planting in the garden, rake the soil surface with a sturdy steel garden rake to break up any large clods of soil and create a smooth, level planting bed. (You can skip this step if you smothered the sod.) Make sure that the soil is dry enough to work: Squeeze a handful of soil. If it forms a tight ball that drips water or holds its shape when you open your hand, it's too wet. The soil ball should hold together slightly, but crumble easily when you touch it gently.

## Preparing Soil for New Raised Beds

One of the benefits of gardening in raised beds is that you can fill the beds with optimal soil. (Learn more about the benefits of raised beds in Chapter 4.) When planting raised beds, you will most likely fill them with topsoil from an outside source, such as a garden center or landscaping company. Depending on the amount of soil you need, you may choose to buy it bagged or in bulk by the cubic yard. Buying your soil in bulk will be the cheapest option, but bagged soil can be easier if you only need a small amount. Look for soil specifically formulated for the type of plants you plan to grow. You may find

options specifically tailored for raised beds. It's usually best to combine your soil with compost. When using bagged soil consider using 75% topsoil and 25% compost. When using bulk soil consider using 50% topsoil and 50% compost.

Before purchasing bulk soil, get a sample and ask questions about the soil. Find out where it comes from and if any testing has been done to make sure it is free of contaminants. To be on the safe side when buying soil in bulk, do your own soil test once it's delivered. Always secure the best soil you can find for your raised beds. Some municipalities may be willing to donate compost or soil for your organization's garden; however, be sure to check out soil quality before accepting it, as you would for purchased soil. Good soil is an important and wise investment in a school garden program.

### Preparing Soil for Containers

Use a commercial potting mix rather than garden soil to fill your garden containers. Garden soil is generally too heavy and will not drain adequately when used for container plants, and it may contain plant disease-causing organisms and weed seeds. A potting mix may include some true soil but will also include materials like peat moss and compost to retain water, along with materials like vermiculite or perlite for good drainage and aeration. Potting mixes are generally pasteurized to kill disease-causing organisms and weed seeds, which is especially important when starting seeds. It is recommended that you use 100% potting soil for containers.

*KidsGardening.org related resource:*
Urban Gardening Benefits and Techniques

## Annual Soil Preparation for Established Gardens

If you are planting annual plants (most common vegetable plants are annuals), preparing the soil for planting is a yearly activity. Each spring you will want to refresh existing garden beds to improve their structure and nutrient content. However, once your garden is established, it is not necessary to till or turn over the soil deeply each spring. Tilling and turning over the soil can be detrimental to the soil, disrupting its ecosystem of beneficial microorganisms, harming soil structure, and bringing dormant weed seeds to the surface.

It's a good practice to cover bare soil with a protective layer of mulch, like wood chips or straw, over the winter. Then, in spring you can gently rake the mulch to one side to add compost and/or scatter granular fertilizer over the soil if needed. Only dig into the soil as needed to plant your seedlings or seeds to minimize disruption to the soil structure and ecosystem. Finally, renew the layer of mulch to keep weeds under control.

If your existing garden beds are weedy, cultivating just the top few inches of soil may be sufficient to get the beds ready for planting without disrupting the deeper layers of soil. Once the weeds are removed, use a metal garden rake to level and smooth the soil to create a seedbed ready for planting seeds.

Some gardeners plant winter crops or winter cover crops, hardy plants that prevent soil erosion and weed growth. If you planted a winter cover crop, tilling is usually the easiest way to incorporate it into the soil in the spring. Do this a few weeks before you

plan to plant the bed to give the cover crop's organic matter time to decompose. If you want to minimize soil disturbance, you can cut the cover crop off at the soil surface, add the clippings to your compost pile, and work the remaining cover crop stubble into the top 3-6 inches of soil with a hand cultivator. Read more about cover crops in the Putting the Garden to Bed section in Chapter 6.

*KidsGardening.org related resource:*
Soil Fungi: A World of Wonder Beneath our Feet

## Choosing What to Grow

With the foundation of your garden established with properly prepared soil, you can turn your focus to plant selection. There are so many delicious vegetables, fruits, and herbs to choose from that deciding what to grow may be one of the hardest parts of gardening! If you're like many gardeners, as you flip through a seed catalog (or scroll through, as most are also online), everything your eye lands on looks enticing. You may be asking yourself questions such as,

- How do I decide among the many varieties of tomatoes?
- Which kinds of veggies will grow best in my part of the country?
- What veggies are kids most likely to enjoy?
- Which plants would best complement my educational goals and relate to areas of learning, such as history, and culture, literature, plant and soil biology, and nutrition?

Make sure to involve your young gardeners in the selection process – it will help cultivate a sense of ownership in the garden and help them get excited to get growing! Consider the following recommendations to help you select plants that will grow successfully and enhance your garden program.

## ❶ Choose plants that can grow successfully in your region.

When growing edible plants, pay attention to the descriptions provided in seed catalogs, on the back of seed packets, or on plant labels. Note the listed days to maturity (DTM) for each particular variety. This tells you approximately the time it will take from seed sowing to harvest or, in the case of crops that are usually planted as transplants like tomatoes or peppers, from transplanting to harvest. This information is helpful in deciding if your growing season is long enough for the crop to mature. For example, if you garden where the growing season is short, choosing tomato varieties that require fewer days to mature will increase your chances of harvesting a good crop before the weather turns cold. Knowing the DTM can also help you figure out if a crop planted in spring is likely to be ready before school lets out for the summer or when you need to start a crop for fall harvest so that it matures before frost.

## ❷ Decide if you want to start with seeds or transplants.

Whether you choose to grow plants from seed or from transplants (young plants) depends on the crop you're growing and where in the country you're gardening. Plants that take a long time from seed sowing to maturity – tomatoes, peppers, and eggplant, for example – are set out in the garden as transplants just about everywhere in the country in order for them to produce a harvest while weather conditions are suitable. These are also, for the most part, plants that tolerate the root disturbance of transplanting.

For some faster-growing plants, such as lettuce, basil, and zinnias, you choose either option: start them early indoors and transplant the seedlings outside or sow the seeds directly out in the garden.

There are two ways to obtain transplants for the garden – buy them from a commercial grower or grow them yourself from seed planted early indoors. Growing your own transplants from seed will give you a wider range of varieties to choose from — many more than are typically available at local garden stores and greenhouses. Growing your own will also usually save you money. However, to produce strong, healthy plants you must be able to give them suitable conditions of light and temperature, and you need to commit to two to three months of daily care of the young plants.

Some plants don't tolerate transplanting well and their seeds are usually sown directly in the garden. Many vegetable crops fall into this category including root crops like beets and carrots, beans, peas, and corn.

Pumpkins, melons, cucumbers, and squash also resent transplanting and usually grow best when direct sown. But they can be started early indoors if they are grown in individual "plantable" (biodegradable) pots so their roots are not disturbed when they're transplanted.

*See Appendix A for details.*

## ❸ Choose plants that can be properly cared for and harvested when kids are around.

Especially if you are gardening in a school setting, you need to be mindful of scheduled breaks. Growing in both indoor and outside settings can present some special challenges. Keeping these considerations in mind from the start will help to make your gardening projects a success.

### Indoor Gardens:

When you're growing plants indoors, it's important to have a plan in place for caring for plants over breaks. Young seedlings, especially, need frequent watering, so if there is a break that's longer than a weekend, make arrangements for someone to check on and care for your baby plants.

### Outdoor Gardens:

Depending on where in the country you are gardening, much of the outdoor growing season may fall outside of the regular school session. Here are some possible approaches to this challenge:

- Youth gardeners can start transplants indoors and transplant and sow suitable crops outdoors before the school year ends. (In warmer climates, a great summer crop to plant is sweet potatoes because students can plant the slips in May and June, and dig them up in the fall.) Over the summer, volunteers, such as students, caregivers, teachers, and community members, care for and harvest from the garden, perhaps donating produce to a local food pantry. When students return at the end of the summer, they can participate in caring for and harvesting from the garden until the growing season comes to a close.

Depending on your climate, there may be time for students returning in late summer to plant cool-season crops like spinach and lettuce for harvest later in the fall.

- If your school runs a summer session, those students might take over caring for and harvesting the garden. Or your school might consider pairing up with a nearby local organization that runs a summer youth program, such as a library, parks and recreation department, or day camp for summer garden care and learning.
- If your garden program is able to invest in season-extenders like cold frames or low tunnels, you can begin planting some crops earlier in the spring or keep them growing later into the fall and early winter months.
- Another approach is to focus on crops that can be planted and reach harvestable size while school is in session. The warmer your climate and the longer your growing season, the easier this option will be.

Cool-season crops that mature quickly, like spinach, lettuce, beets, and radishes, are all good choices for spring and fall gardens in many parts of the country.

### ❹ Consider sun versus shade.

If you're selecting plants for an outdoor garden, keep the growing conditions in mind as you choose what to grow. The amount of sunlight required by different plants varies, so match plants to the sunlight you have available. Although most vegetable crops do best in full sun (6-8 hours of direct sun a day), full sun is a must for fruiting vegetable crops like tomatoes and peppers. If your garden space gets only 4-6 hours of sunlight a day, root crops like carrots and beets will still thrive. If your garden only gets 3-4 hours of direct sun, herbs and leafy crops like lettuce are good choices.

### ❺ Select a diversity of plants.

Planting just one or two types of plants can make your garden a target for pests and diseases and result in the loss of much of your harvest. Avoid this by planting a diverse selection of crops. Then, if one crop falls victim to a particular problem, most likely it will not wipe out the whole garden.

*KidsGardening.org related resource:*
Plant Families for Pollinators

### ❻ Make classroom connections.

Connecting the plants grown in the garden to other areas of study can really enhance the learning process. For example, growing a Three Sisters garden of corn, beans, and squash offers opportunities to explore Native American customs, nutrition, and history. As students dig in, investigations into plant and soil biology will also flourish. Many children's books can inspire thematic growing projects. Connecting garden plants with classroom literature captures students' interest, curiosity, and cross-cultural awareness. Students might grow and taste the same foods as the characters in the book they're reading. Plant and garden experiences can also inspire students to write their own tales, exercising their imaginations and language skills and revealing what they've learned in doing so.

## Determining When to Plant

Your final preparation task is to create a schedule for sowing seeds and planting transplants in the garden. Correct timing of both indoor seed sowing and outdoor seeding and transplanting is a crucial part of growing healthy plants. Start seeds too early indoors and your seedlings may be leggy and pot-bound by the time outdoor planting time arrives; too late and your harvest will be delayed. Plant warmth-loving seeds or transplants outside too early and cold soil and air temperatures may harm them. On the other hand, crops that do best in cooler weather may not thrive if they are planted late and end up maturing when the weather is hot.

Fortunately, it's not difficult to come up with a seed starting schedule that is appropriate for your area and the crops you plan to grow. Figuring out what to plant when starts with finding out the average date of the last spring frost in your area. Then you can count the number of weeks before or after this date to sow seeds of each crop for the greatest likelihood of success. The local office of your state Cooperative Extension Service or local Master Gardener program can also help you determine the average last spring frost date (and first fall frost date) for your area.

If you are starting seeds early indoors to produce transplants to go out in the garden, your goal is to have transplants reach the best size for transplanting at a time when the weather conditions are suitable for them to go outside. Timing is also important for seeds planted directly in the garden. For example, cold-tolerant spinach seeds can be planted as soon as the soil is dry enough to work in the spring, while warmth-loving sunflower or pumpkin seeds should go in the ground two weeks after the last frost date.

Thankfully, the timing (relative to the last spring frost date) for sowing seeds has been worked out for you by previous generations of gardeners. This information is available in plant catalogs or on the back of seed packets. For your reference, we have also included seed-staring information for some popular vegetables and herbs in Appendix A.

As you are creating a planting schedule, keep in mind that all gardening is local. The specific seeding, transplanting, and direct-seeding dates for your garden will depend on where in the country you are. It will come as no surprise that the last spring frost date in Texas comes quite a bit earlier in the year than in Vermont! In the warmest parts of the country, you may be able to grow some crops outdoors year-round or it may get too hot to grow other crops in mid-summer.

Your best source of information on the growing conditions in your area is your state Cooperative Extension Service. Many of the state Extension Service websites have seed-starting calendars that make it easy to come up with a seed-starting and planting schedule for your classroom and garden.

You can get multiple harvests of some crops through succession planting. Depending on the crop you're growing, your climate, and the months when your garden program is active, you may be able to plant the same crop multiple times during the season, a technique called succession planting. Some fast-maturing crops like lettuce may be planted every few weeks to give a continuous harvest. Cool-season crops like cabbage, spinach, and many other greens may be planted in early spring for an early summer harvest, and again in mid- to late-summer for harvest during the fall months.

## In Summary

Preparing the soil and planning what and when to plant are important steps that will contribute to your school food garden's success. Letting kids contribute to each of these tasks will get them excited about their upcoming garden. Much of this planning and prep work can be done during the winter months when activity out in the garden is at a standstill.