

# Plan for a Safe and Successful Edible Garden

Many school and youth gardens center on food gardening, with vegetables, herbs, and fruits growing in various combinations. Edible gardens are a great way to get kids to broaden their healthy food choices while learning about plants and cultivating a sense of environmental stewardship.

If you are planning on growing vegetables and fruits, try to choose a site that gets full sun - at least 6-8 hours of direct sun a day. If you don't have a suitable area in full sun, you may still be able to grow some edibles successfully, such as greens and root crops, so don't be discouraged if your site's exposure is less than perfect.

A traditional outdoor edible garden is planted in the ground. A level site is easiest to garden on, but a sloped area can also be suitable if you build terraces. And there's nothing to say that your garden must be one big rectangle planted in straight rows. Garden beds can be designed in all sizes and shapes; vegetables can be mixed with flowers; and fruit trees and bushes can enhance the landscape. If the area where you plan to garden is currently growing grass, you'll need to plan on removing the sod and cultivating the soil before planting. While this can be done by hand in small garden areas, larger ones are more easily prepared using sod cutters and rototillers, which can be rented as needed.

Another common option is to use raised beds. These are framed structures filled with soil, typically 9 inches deep (set on soil) to 2 feet deep (set on paved surfaces). They may be made of rot-resistant wood like cedar, concrete blocks, or recycled plastic planking and. Although they require more initial investment than a traditional in-ground garden, the benefits of raised beds pay off in the long run: they're easier to cultivate; they can minimize problems related to toxins in the soil, such as lead; there are fewer weed and drainage problems; and the raised soil and plants are protected from crushing footsteps. Plus, design is flexible - you can build them to be handicap accessible and to fit the space available, whatever the shape or size. For more information about raised beds, check out Raised Beds 101.

You can also grow a garden in containers. Typically, garden containers are pots and troughs made of clay, plastic, or wood, but plants aren't fussy - they'll grow in anything that holds soil and has drainage holes. Experiment with whatever is at hand, from discarded 5-gallon buckets to an old bathtub! Window boxes and hanging baskets are great if you have little or no ground space.

By adding handles or wheels, or placing containers on wheeled platforms you can make your garden mobile. This will allow you to move plants around the space to where they'll grow best as the season advances or as conditions change (e.g., the angle of the sun shifts slightly each day). If threat of vandalism is extreme, you can move containers to sheltered or locked area.

## Start with a Safe In-ground Site

Giving kids the opportunity to grow, harvest, and eat delicious and nutritious vegetables, fruits, and herbs fresh from the garden is what school and youth gardening programs are all about. To keep this experience positive and safe, you need to pay attention to some basic guidelines when deciding where to locate your food garden. This shouldn't discourage you from allowing children to enjoy from all benefits that come from gardening and eating fresh food. The following safe site suggestions are, with a little planning, generally easy to implement. They'll help everyone involved in your garden program bring in a healthy harvest!

Start by learning the history of your site, if possible. This can give you clues to possible hazards to be concerned about, whether it's industrial contaminants, lead from paint, or the likelihood of flooding. Also, assess the garden site's surroundings and take into consideration what might be carried into the garden along with runoff from areas nearby, such as parking lots or agricultural fields or pastures. Place gardens away from roadsides, older painted structures, garbage dumps, and industrial zones.

## Test the Soil

No matter where your garden is located, it's always wise to start out with a soil test that includes testing for contaminants such as lead and other heavy metals. Although this type of contamination is often associated with urban soils, it's also possible for suburban and rural area soils to be contaminated from lead paint residues, pesticides, or car exhaust from the days of leaded gasoline.

The main route of exposure to lead in the garden is through inadvertent direct ingestion of the contaminated soil and dust that gardeners and plants come into contact with in the garden. While plants grown on soil high in lead may take up some through their roots and store it in their leaves and fruits, most of the risk comes from ingesting the lead contaminated soil or dust deposits on the plants rather than from actual uptake of lead by the plants themselves. Similarly, contaminated soil can be ingested via dirt and dust on hands, a significant concern especially when children are working in the garden.

While it's typically considered safe to eat fruits and vegetables grown in soils with lead levels up to 300 ppm, a level found in many urban soils, this standard applies only where soil exposure to children is not a concern. Where soil ingestion can occur, as with children who may touch their mouths or food with dirty hands, soil with lead levels greater than 100 ppm should not be used for edible gardening.

If the soil test determines areas your site has lead levels above 100 ppm, be sure to seek out expert advice from your local Cooperative Extension Service or Health Department on the safest strategies before beginning to garden. Do NOT grow edibles in the ground. You may still be able to garden safely by laying heavy-duty landscape fabric over the ground and pathways and mulching thickly to keep kids from easily coming into contact with the soil. Then construct raised beds at least 18 inches tall and fill them with fresh, uncontaminated soil. Supervise young children to ensure they do not eat dirt or unwashed vegetables and make sure everyone washes hands immediately after gardening and before meals.

**Even if your site is technically deemed “safe” but has somewhat elevated lead levels, it’s a good idea for school gardeners to take measures to reduce exposure to soil-borne lead, including:**

- Add plenty of organic matter to the soil (helps to lessen plant uptake of lead)
- Maintain soil pH around 6.5 (helps to lessen plant uptake of lead)
- Supervise young children to ensure they do not eat dirt or unwashed vegetables
- Make sure everyone working in the garden washes their hands immediately after gardening and before meals
- Grow fruiting crops, such as tomatoes, peppers, beans, and okra, rather than root crops and leafy vegetables or herbs. Studies have shown that lead does not readily accumulate in the fruiting parts of vegetable and fruit crops, but accumulates more in leafy vegetables like lettuce and root crops like carrots.
- Peel root crops and removing the outer leaves of leafy crops before eating
- Clean produce thoroughly before eating or storing to remove as much contaminated dust and dirt as possible

If you are not growing edibles, you may still be able to plant a garden if you take steps to limit children's direct contact with lead contaminated soil and dust by putting down landscape fabric and topping it with mulch. Soils with lead levels that are not suitable for veggies and fruits may still grow great shade trees, flowering shrubs, and cut flowers, as long as adults taking proper precautions do the planting and working of the soil. Risk varies with the level of contamination, so if your soil test reveals lead levels in excess of 100 ppm, be sure consult with your local Extension Service and Health Department for advice. Also make sure knowledge about the contamination is passed down to the new garden coordinators each year so that later on, your ornamentals are not replaced with edibles.

A soil test will also tell you whether you need to add amendments to adjust the soil pH or add nutrients before planting. Knowing the current level of nutrients present helps you apply the correct amount of fertilizer needed for healthy crops and avoid over-fertilizing. Most soil tests results include recommendations for the types and amounts of fertilizer needed to correct any nutrient imbalances. Contact your local Extension Service for information on soil testing, the cost of which is usually very reasonable.

## **Plan for a Safe and Convenient Water Source**

Whichever type of garden you choose, be sure to keep accessibility and maintenance in mind. All gardens will need water, so be sure that outdoor spigots, hoses, and other watering needs are readily available to your site. Make sure you have a potable (drinking water safe) water source to irrigate your edible garden. Water provided by your municipality is a safe source. If the water you're using comes from a private well or untreated surface water source such as a pond or river, have it tested regularly for bacterial and other types of contamination. Your local health department can provide you with information on water testing.

However, recent news about lead contamination of water supplies may have you wondering about the safety of your water supply. Even if the water delivered to your building doesn't have excessive lead levels, the water coming out of a faucet may have high levels due to the building's plumbing. So it's a good idea to test the water at the outlet that is used to provide water to the garden, especially if this outlet is also used to provide drinking water, such as filling jugs to provide drinking water to students out in the garden. For more information, see the EPA's Testing Schools and Child Care Centers for Lead in the Drinking Water.

## **Use Rain Barrel Water Safely**

Water collected in rain barrels is not considered potable and may contain harmful bacteria and other contaminants, especially if it's water collected as runoff from rooftops. The safest course is to use rain barrel water only for irrigating non-edible crops. If you decide to use water from rain barrels on edibles, have the water tested regularly and clean and sanitize the barrels frequently.

## **Plan for Garden Access**

Think about how students will move safely from the classroom out to the garden site and how they will move about within the garden itself. For example, you may want to plan for extra wide pathways to accommodate students working in groups or design a spot for sitting large enough for the entire class to gather for discussions.

Plan for adequate and accessible tool and equipment storage. If they must be stored away from the garden site, consider investing in a garden cart to move them easily. Also plan for how materials such as lumber for raised beds or bulk mulch can be delivered to the garden site if needed. Siting the garden for access by vehicles will be most convenient, but may not always be an option.

## **Keep Critters Out**

Consider garden security, whether from vandalism or four-legged marauders like deer. Do your best to keep both wild and domestic animals from your garden site, as the waste they leave behind can be a source of harmful pathogens. How you accomplish this will depend on what is roaming around your neighborhood. A tall or wide fence is most effective at keeping deer out; a lower wire mesh fence will exclude rabbits and woodchucks, but needs to extend underground about 6 inches to prevent them from tunneling under. Most kinds of fencing will exclude dogs, but it's much more difficult to keep free-roaming cats out; if cats are a big problem, repellents applied regularly along a fence line may be helpful. Don't locate bird feeders or birdhouses within the garden area.