
Food Safety Process

Unit III: The Garden Site Location and Soil



Site Location

The location of the garden must be carefully selected as it can impact food safety. The District Ground Supervisor and the City of Pasadena Environmental Health Department need to consider many different factors before locating the garden site.

The location must be away from dumpsters, underground tanks or other underground sources of contamination, and any area near a facility that houses livestock. The area should be free of overhead trees and tree limbs where animal droppings can contaminate the garden. Fencing should be adequate to deter animals such as deer, rabbits, groundhogs, and pets. Fence openings should be no greater than one (1) inch. Consider installing a barrier using chicken wire, but consult with your school's principal and engineer before installing a fence.

Unwanted visitors can become the source of intentional and unintentional contamination leading to serious illness or injury. The garden location should be an area where the garden is fenced in to deter unwanted visitors.

Soil Contaminants

When evaluating your garden site's soil, these contaminants will be tested for by an IEPA approved laboratory:

1. Semi-Volatile Organic Compounds (e.g., benzo(a)pyrene)
2. Chemicals (e.g., herbicides and pesticides)
3. Heavy Metals (e.g., lead)

Soil Testing

Laboratory testing will determine your soil's nutrient status as well as identify possible carcinogenic or heavy metal contaminants. *As a reminder, any soil testing on Schools' property must first be authorized by the PUSD/PPHD/ENVT Environmental Services Manager.* Results of the soil lab test shall be provided to Pasadena Environmental Health.



Resource:

- Appendix K – Soil Test Results Examples

Raised Bed

Some edible school or community gardens are planted in raised beds. Raised beds can be built from one foot to approximately waist high and must be accessible to students with disabilities and must be ADA (Americans with Disabilities Act) compliant.

Use non-toxic, non-leaching materials for raised-bed gardens, containers, stakes, or trellises. Cedar or composite recycled timbers are considered good materials to use. Hollow tiles, stone, bricks, logs, “plastic lumber” made of recycled plastic and unpainted concrete blocks can also be used. *Do not* use pressure-treated wood or used tires, or single-use. The holes in concrete blocks can be filled with dirt to seed vine crops such as squash or pumpkins.³

Soil Amendments

Soil amendments are added to improve the soil's physical properties whether it's aeration, water retention, or nutrient-holding capacity. Soil amendments include the following:

1. Compost



2. Manure (*Do not use raw manure. Use only commercial composted manure that has been properly treated.*)
3. Fertilizers*

*PUSD and PPHD/ENVT prohibit the use of harmful chemicals on district and city property. We promote natural growing methods in school community gardens.

Commercial soil amendments must be certified by the Mulch and Soil Council (MSC) and applied in accordance with applicable federal, state, and local regulations. You must have Material Safety Data Sheets for all commercially obtained soil amendments and keep these MSDS with the garden records.



Compost

Composting creates a beneficial product out of organic waste that would have otherwise ended up in the landfill. Compost involves the decomposition of organic matter such as brush, tree pruning's, and acceptable grass clippings and fruit/vegetable scraps. Microorganisms break down the organic matter to create a nutrient-rich material, called humus. Humus helps improve soil quality and should be incorporated into soil every year.

There are many benefits to using compost that include:⁴

1. Improving soil structure, which supports root development
2. Providing plant nutrients to the soil, which allows an increased uptake of nutrients by plants
3. Helping absorb and retain water in the soil

However, you must ensure your compost is free of potential pathogens. You also need to make sure that it is stored and handled properly. Here are a few items to consider when using compost in your school community garden.

1. **If your school purchases commercial grade compost:**
 - a. A good resource for approved compost suppliers is <http://www.omri.org> (Organic Materials Review Institute or OMRI).
 - b. The *Food Safety Administrator* is responsible for choosing a supplier and keeping relevant compost documentation on file.





- c. When choosing a supplier, you should have documents on file that detail composition and the method of treatment including temperature and moisture management. The producer should also be able to verify that the pile was protected from recontamination. Here is a list of IEPA compost standards to consider:⁵
 - i. Must be free of any materials which pose a definite hazard to human health due to physical characteristics, such as glass or metal shards
 - ii. Must not contain man-made materials larger than four millimeters in size exceeding 1% of the end-product compost, on a dry weight basis
 - iii. Must have a pH between 6.5 and 8.5
2. **If your school/community garden is producing or wants to produce its own compost:**

Although composting provides an excellent learning tool for your students, compost produced on-site can *only* be used in PUSD and PPHD/ENVT ornamental gardens and *not* in edible gardens. Compost made from food scraps cannot be adequately monitored, controlled or tested to ensure the final product is safe for growing food served to our students and customers.

Despite only being used in ornamental gardens, composting procedures must still comply with state and local regulations.

Manure

Commercial manure that has been properly treated at the correct temperature range can be used for school gardens.⁷ Schools should *not* use farm manure or pet waste. With each purchase of manure, documentation of analysis should be received and filed with your other soil amendment records. Again, OMRI (www.omri.org) is a good resource for organic products.



Fertilizers

1. Chemicals

The Pasadena Unified School District Integrated Pest Management Policy prohibits the use of any harmful chemicals including chemical fertilizers. Read on for recommended methods.

2. Organic Fertilizers

Blood meal, dried blood, fish emulsion, and kelp are safe to use as natural fertilizers and animal repellents. All can be found at your local nursery. Look for OMRI approved fertilizers and amendments. These products comply with USDA organic standards.

If you are looking for natural alternatives to improving your plant's health, other methods include:⁸

- a. Choosing plants suited for your site and soil.
- b. Starting with healthy seeds and plants.
- c. Growing disease resistant cultivars.

Use the Soil Amendment Log (included in the Appendix L) to record the types of fertilizers used in your garden.



Resource:

- Appendix L – Soil Amendment Log



Water Quality

Healthy water is an essential element to safe produce. From pre-harvest to post-harvest, *only* clean, potable water must be used.⁹

All PUSD and PPHD/ENVT gardens use municipal water. All water supplied by the City of Pasadena Department of Water is required by Federal and State law to meet stringent water quality standards. Testing should be requested only where water service has been interrupted or where construction to the system has occurred.

Rain Barrel Water

Many gardens utilize rain barrels to help conserve water by collecting and storing water from rooftops. Rain barrels are a great way to save water for bouts of dry weather. This water is *not* potable. Rain barrel water may only be used to water ornamental plants or trees.

If rain barrels are used, they must be designed and constructed to prevent and control mosquitoes from breeding. Mosquitoes are attracted to standing water and therefore a fine mesh screen should cover all open-ended rain barrels. Rain barrels are not meant to serve as permanent or long-term water storage and should be emptied once every seven days. Consistent emptying will prevent mosquitoes from entering and breeding in the water.

Irrigation Method

Watering by hose or sprinkler should be scheduled in the morning. Following this schedule will not only help conserve water but also speed-up leaf drying time, which will help reduce the survival of pathogens on the crop.¹ Also make sure to use food grade containers when transporting water.



© 2016 Pasadena Unified School District with funding from USDA. All rights reserved.





Get Involved

To further help and protect your water sources, consider joining your local watershed group to participate in decisions and increase your awareness of water use in your area.

Grow Naturally

The *PUSD Integrated Pest Management Policy* prohibits the use of any harmful chemicals on PUSD property including chemical herbicides and fertilizers. Read on for recommended methods.

Natural growing methods are encouraged in school community gardens since it minimizes the health risks of Garden Participants and the impact on the environment. Instead of using conventional fertilizers and pesticides, here is a list of recommended practices:

- Synthetic herbicides, fungicides, or insecticides (with the exception of mosquito repellent) are prohibited for use in the garden.
- There are many insects that can be found in the garden, and the majority of them are beneficial. A small number, however, do damage crops, but these can be successfully managed using organic pest management techniques, such as companion planting or Integrated Pest Management, which is described below. Chemical pesticides should not be used in school gardens.
- Instead of using herbicides, weeds can be controlled by mulching, hand weeding and weeding tools.

Animal and Pest Control

Although the risk of potential pathogens found in domestic animal manure is a major concern, wild animals, including rodents, deer, geese, and even flies have been found to carry harmful human pathogens such as *E. coli* 0157:H7. Of course, it is nearly impossible to eliminate all animal influences from garden sites and produce handling areas, but there are steps you can take to minimize their presence or activities. A well-managed animal and pest control program will help reduce pest infestation problems.



Animal and Pest Control in the Garden^{10,7}

- *Garden Coordinator(s)* need to ensure that produce is harvested regularly and compost or rotting vegetables are properly disposed.
- Keep cats, dogs and other pets out of the garden, as animal waste can be a source of bacteria, parasites and viruses.
- Do *not* feed birds near the garden. Bird feed can attract rodents.
- Restrict nesting and hiding places for rodents by mowing grass and tall vegetation that is around the garden.
- Cover the ends of stakes and posts with plastic or metal cones to keep birds from resting and defecating in or near the garden.
- It is recommended that a fence be installed around the garden site. A fence will reduce the risk of harvesting produce contaminated by animal droppings. Please note that PUSD requires decorative fencing be installed in areas that face the street. Consult with your school's principal and engineer before installing a fence.
- If serious infestations occur, please contact the PUSD *Garden Coordinator(s)*.



Animal and Pest Control in the Produce Handling Areas^{10,1}

- Traps should be inspected daily. The *Food Safety Administrator* should keep a map of all trap locations with all other food safety records.
- If serious infestations occur, please contact the PUSD *Garden Coordinator(s)* and PPHD/ENVT Environmental Department.

