

## LESSON 2

### Garden Siting and Design

Various characteristics of the space where you plant your garden will determine the types of practices you should use for highest success. It is important to think about each of these considerations before preparing or planting. Gardens can take various forms; your needs and your garden's location will help determine which is best for you.

#### Learning Objectives

1. Understand the necessary considerations for siting a successful garden.
2. Become familiar with various types of small garden designs and the benefits and drawbacks of each.

#### Materials Needed

- 1-2 shovels;
- water source (hose);
- watch or timer.

#### Siting Considerations

First, consider the position and directional orientation of your garden beds and how these will affect the garden's productivity. The following are specific considerations.

1. **Sunlight and shade:** Food-producing gardens typically need 6-8 hours of full, unshaded sunlight each day. You can always experiment and try growing some things with less sun, but in general, more sun means more growth.
  - a. Check the prospective garden space at different times of day (such as 8am, 12pm, and 4pm) and in different seasons to determine how much sun it receives throughout the day and throughout the year. Remember that late fall and winter will generally have fewer hours of full sun than late spring and summer because the sun is lower in the sky.
  - b. Note sources of shade in your intended growing space, including buildings, trees and shrubs, fences, and so on, and their position relative to the garden site (north, south, etc.). Ideally, tall, shading plants and structures should lie to the north of the garden rather than south of it because most of our sunlight comes from the south.
2. **Water accessibility:** Food-producing gardens need regular watering. Are hose spigots or an existing irrigation system easily accessible to the space? If you choose to install an irrigation system (rather than doing hand-watering), it may connect to a hose spigot or tie into an existing irrigation system. If you plan to harvest rain or greywater (used water from sinks, washing machines, etc), how and where will you develop the path of these water sources?
3. **Soil quality and terrain:** Soil quality, slope and drainage can impact a garden's productivity. In Lesson 3, we will learn more about soil components and structure. For now, examine the existing soil at your site and observe the space for slope and drainage; during and after rainfall is an especially good time to do this. Your knowledge of previous rainstorm impact on your garden area is also informative (does water run off quickly, and if so, where does this occur?).  
Because soil quality and drainage may impact your garden design (bed types, orientation), it is important to pay close attention to the following factors:
  - a. Is the soil compacted or loose? Has the soil been tested for contaminants? (See Lesson 3 for more on compaction and testing).
  - b. Is the space sloped (more than a 3% grade), which could lead to lost water and soil erosion?
  - c. Is the space in a low spot where it would collect rainwater? Here in San Diego, where rain is rare, a low space for water collection can be good, but the soil must be able to absorb and drain adequately or the space will become a puddle.





### ACTIVITY 1

**To check soil drainage, do a drainage test on your garden site (a.k.a. a percolation or “perc” test). Dig holes a foot or more deep and wide in different places in your garden site. Fill each with water. After the water drains out fill it again. Time how long it takes the water to drain out the second time. Water should drain out of the hole in 4-8 hours. If it takes more than 12 hours you may have drainage problems.**

There are several ways to amend bad drainage. One is to till deeply to break up hardpan layers and add lots of organic matter (Lesson 3). Growing in raised beds is another alternative.

4. **Existing trees and shrubs:** Are there trees/shrubs already in the space that you would like to keep? If so, how will they affect the light? Are there trees/shrubs that will be removed for the garden? If you are planning the garden prior to their removal, imagine the space without them to make an accurate plan. How big are existing trees/shrubs expected to get? If they will get much bigger than their current size, you’ll have to plan for their effect on the garden. They may shade more, and their root patterns may affect your ability to dig in your garden. Note that existing trees/shrubs may compete with garden plants for water.
5. **Existing pests/weeds:** Is there any evidence of pests, such as gopher holes, snail trails, birds, rabbit droppings, or invasive plants that will impede plant growth from the start? Note that the types of weeds in a site can provide information about its soil and drainage; for example, horsetails suggest that the area is boggy. If no weeds are present, you might ask why they are not growing there. Keeping wild plants and wildlife in balance is a necessary part of ensuring the health of your garden. For help identifying weeds, visit the University of California Integrated Pest Management (IPM) weed identification photo gallery at: [http://www.ipm.ucdavis.edu/PMG/weeds\\_intro.html](http://www.ipm.ucdavis.edu/PMG/weeds_intro.html).
6. **Accessibility:** You and your family are the users of the garden, so it should be in a location that is easily accessible for you. Is it close enough and easily reached so that maintenance will not be unnecessarily difficult? If you need to bring in soil amendments, is the garden site close to an access point where hauling will be feasible?
7. **Community:** Do you want to share your garden and gardening with neighbors? If so, you might consider a front yard garden that attracts attention and interest. Gardens can grow community as well as food.



### ACTIVITY 2

**At home, students sketch out their intended garden space, labeling all the elements, to focus attention on the benefits and limitations of the space. These sketches will be shared and reviewed at the next class.**

#### Garden Designs

Your garden might incorporate one or more of the following designs and shapes:

#### Types of Beds

1. **In-ground beds:** This is simply planting directly in the ground to garden. Double digging is a method that loosens soil and incorporates amendments. (See Lesson 3 for how-to’s). These beds may end up being a little higher than your garden walkways due to both digging and adding enrichment to the soil. You can also dig down to make them a bit sunken if water catchment is an important part of your garden plan.



2. *Raised beds*: These can be piles of soil built up without a frame or sheet mulched (aka Lasagna Beds) into or above the existing soil. These can simply be be piles but often something is used to mark the edges, like rocks, bricks, etc. A more organized 'look' can be achieved by building wood, cinderblock, or stone walls approximately 1 to 1.5 feet high and then filled in with soil. Any wood used to contain a raised bed should be untreated, because treated wood contains poisonous toxins that can contaminate soil and plants.
3. *Containers*: These are moveable receptacles with holes drilled in the bottom for water drainage and filled with soil. These can be pots, half barrels, bathtubs, dresser drawers, crates, etc. You can be very creative with containers. Use whatever works!

### Garden Shapes and Orientation

This can apply to all types of beds. Any bed, regardless of shape, should only be as wide as two arm-lengths, (3-4 ft.) so you never have to walk on it to reach plants.

1. *Keyhole*: This bed shape, like a horseshoe or series of horseshoes, allows for easy access to all plants in the bed, because you can reach from outside or inside the keyhole. It minimizes walkways and maximizes your planting area (see appendix "Why Garden").
2. *Spiral*: This is a bed shape often used for herbs. Use rocks/bricks/etc to create a spiral shape, raised in the middle, and filled in with soil (see appendix "Why Garden" for a drawing).
3. *Orientation*: This is for linear or rectangular beds; you can orient them north-south so they will receive sun on both sides am and pm with taller plants at the northern end to prevent shading, or east-west for equal sun exposure (from the south side) across. If more than one bed is built, consider how shadows from plants in one bed might shade the other.



### ACTIVITY 3

Go over the list of garden types and shapes (see "Garden Designs") and brainstorm benefits and drawbacks of each design (use table below as your guide). Which bed type might work best in your space?

BED TYPE	BENEFITS	DRAWBACKS
GROUND-LEVEL	Flexibility of shape; with sheet mulching and/or cover cropping can build bed on top of turf/hard ground; retains water better; aligns with permaculture practices	Soil is less protected against erosion; can be more susceptible to vertebrate pests; not recommended if soil is potentially contaminated





BED TYPE	BENEFITS	DRAWBACKS
RAISED	Holds soil in place; You control the soil quality; soil warms earlier in spring because there is less soil to warm; can build on top of turf/hard ground; reduces stooping/bending to tend to plants; easier to build protection from vertebrate pests; reduces risk of soil contamination	Can be expensive to fill with soil; more materials required to build; gravity and elevation can decrease water retention

BED TYPE	BENEFITS	DRAWBACKS
CONTAINER	Can be moved to modify garden design over time or respond to sun availability; good for small spaces, porches, patios; takes advantage of available resources	Requires careful planning for proper drainage; typically lower growing capacity; can be expensive to fill with soil. Some containers, like black nursery pots, get hot on the sunny side and soil temperature can get high enough to kill roots in part of the container unless it is shaded. Wood containers provide good insulation against heat. Small containers dry out quickly and need frequent irrigation

16

**Other Garden Components**

When planning your garden design, you should consider where you might want to place other garden components, like a compost pile and perennial trees and shrubs. Remember to think about shading, as described above. As you'll learn in Lesson 3, a compost pile does best when it's out of the sun, which just dries it out faster.

**References**

1. Occidental Arts and Ecology Center.  
"Why Garden?"  
*A brief, dense resource on garden design and planting.*
2. Statewide IPM Program, Agriculture and Natural Resources, University of California.  
"Identification: Weed Photo Gallery."  
Available at: [www.ipm.ucdavis.edu/PMG/weeds\\_intro.html](http://www.ipm.ucdavis.edu/PMG/weeds_intro.html)  
*A photo gallery with details for identifying weeds by sight.*

**Additional Learning**

1. Sawyers, H. 2009.  
"How to Build a Raised Planting Bed." *This Old House Magazine*.  
Available at: [www.thisoldhouse.com/toh/how-to/intro/0,,1615067,00.html](http://www.thisoldhouse.com/toh/how-to/intro/0,,1615067,00.html)  
*A step-by-step guide with photos on building a raised bed.  
The bed is more elaborate than necessary, but the guide provides good tips.*