How to Construct a Raised Bed in the Garden

Learn the benefits of raised beds for growing vegetables along with tips and how-to advice for constructing them.

Why Raised Beds?
Raised beds create garden space where usable area is limited or soil is contaminated. Other benefits include a longer growing season, better soil structure and improved drainage. Raised beds built at the proper height are ideal for individuals with physical limitations.

Selecting a Site
When growing vegetables, site the bed in an area that receives at least six hours of sunlight. If necessary, remove lower limbs on nearby trees for added light. **Note:** Do not install a raised bed near black walnut trees, as they produce a toxin that will inhibit growth of vegetables, particularly tomatoes.

The Layout
Locate beds so that plants receive maximum sunlight and do not shade each other. Determine the north/south axis of the site and lay out the beds either in a north/south or east/west direction, not on a diagonal. When incorporating a trellis for vine crops such as cucumbers, beans, or grapes, run it east/west, and locate it at the northern end of the bed. Shortest crops can occupy the southern end. Stake out the beds with garden twine to establish the outer dimensions of the beds and the paths between them.

Building Beds
Raised beds can vary in size depending on the location but they are typically 8 to 12 inches high to allow for adequate root development. They can be constructed using several types of building materials including wood, synthetic lumber, brick, or stone. Line the bed with hardware cloth to prevent burrowing animals like groundhogs from damaging crops.

If there is reason to suspect contamination of the native soil, special soil tests may be required, and care must be taken to cover the soil in both the beds and the walking paths with heavy matting to prevent disturbing or exposing the contaminated material. Matting can then be covered with bark or wood chips in the paths and with clean, imported garden soil in the beds.

Use untreated hardwood planks of black locust, cedar, Osage orange, redwood, or oak. These rot-resistant woods are more expensive but are long-lasting and safe. **Note:** Do not use pressure-treated wood or railroad ties for your raised bed garden. Avoid wood containing copper sulfate, creosote, cuprinol, or compounds containing penta chlorophenol, which can be toxic to plants. A maximum width of 4 feet is a good choice for adult gardeners. When constructing a wooden frame, install support stakes halfway down the length of the bed to prevent the wood from bowing after it is filled with soil. Use 3-inch galvanized screws, rather than nails, in construction. Finally, be safe! Use goggles and a dust mask while cutting the wood. Wear gloves when handling power tools, wood components, and hardware.
Fill the Raised Bed with Soil
To smother grass or existing weeds, lay cardboard in the bottom of the bed before adding soil. Purchase or prepare a soil mix with high organic matter. Landscape supply companies offer custom mixes for different uses. Choose a mix that has good nutrient and water-holding capacity. A soil and compost mix is recommended at a ratio of 70% soil to 30% compost. Soil is essential to successful gardening so don't guess at how to improve it! Instead, have your soil tested. Purchase a Penn State soil analysis kit from your county extension office and mail your soil sample to the Penn State Analytical Services Lab for analysis. The results generally take about two weeks to receive and will explain the nutrient content and pH of the soil. It will also provide directions for amending the soil for maximum plant growth.

Photo credit: Jonathan Hanna on Unsplash

Bringing it All Together
Constructing a raised bed can be an enjoyable garden project. Determining layout, selecting building materials and choosing the correct soil for optimum plant nutrition are keys to success. Careful planning is time well spent and will provide productive outcomes for your favorite vegetables, fruits, or herbaceous plants.

Additional Resources
Soil Health in Raised Beds
Quick and Easy Raised Beds for Urban Growers

Authors
Elizabeth Finlay
Master Gardener Area Coordinator

Andy Faust
Master Gardener Area Coordinator
avf100@psu.edu
814-765-7878

extension.psu.edu