10-Minute University™
The Clackamas County Master Gardener Association in collaboration with and in support of the OSU Extension Master Gardener™ Program

Raised Bed Gardening

Gardening in raised beds has been a common practice for centuries. "Raised" means the soil level in the bed is higher than the surrounding soil level, and "bed" implies it is small enough to work from the walkways.

Advantages

- Better drainage: You can put low, cold, wet areas into productive use.
- Warmer soil: You can plant earlier; plants will grow faster and yield more.
- Defined beds: You walk on paths along the beds which minimizes soil compaction.
- Higher production: Higher density planting and intensive soil improvement increases the yield.
- Easier pest control: You can place chicken wire or hardware cloth under raised beds to exclude moles and gophers; and/or attach low fences to framed beds to discourage rabbits.
- Walkways of sod, mulch, stone or brick around the beds provide mud-free access year-round.
- Conserves water: Small beds are ideal for drip watering systems that water where it is needed and not on foliage. Wet foliage can promote disease.

Raised Bed Basics

- Height and materials: You can mound 6” of soil without a frame; deeper beds need a frame to stay intact. Rot-resistant lumber, cinder blocks, bricks, or rock layers can make a frame. Beds taller than 18” may require extra drainage in the bottom. What does this mean? How? Beds elevated 2 feet or more can lessen lower back stress and provide wheelchair access.
- Guidelines: Keep the beds narrow; match their length to the site and to the gardener’s needs; and place them near your watering system. To reach everything in the bed without stepping into it, make beds a maximum of 2-ft wide if access is from one side and 4-ft wide if accessible from both sides. For beds wider than 4 feet, use planks or stepping stones for access paths to reduce soil compaction.
- Orientation: A north-south bed is best for low-growing crops, allowing direct sunlight all around. Tall crops, such as pole beans, trellised peas, tomatoes, are best on the north end/side of a bed, so lower-growing crops can be planted on the south end/side of the bed without being shaded.
- Attachments: The raised-bed frame can support poles, low fences, trellises, seating, or even a temporary cold frame. Imagine starting plants in the ground early with row covers!

Safety Issues Concerning Some Materials

- Pressure-treated wood, synthetic wood (recycled plastic), vinyl fencing, rot-resistant woods (cedar and redwood), stone, concrete block, and brick are potential choices for framed raised beds. Cement block leaches lime, which is okay here; while treated lumber (creosote or pentachlorophenol) can injure plants.
- Chromated copper arsenate (CCA) treated lumber was phased out of consumer/residential products in December 31, 2003. The Environmental Protection Agency (EPA) does not require replacing existing CCA-treated structures but suggests sealing them annually with an oil-based stain. Research also found heavy plastic can be placed between the wood and soil to eliminate soil contact with treated wood.
- Alkaline copper quartenary (ACQ) is EPA approved for garden use and is arsenic-free.

Soil Basics

- Timing: Work the soil in the spring only when a handful of soil squeezed in the palm yields no more than a few drops of water. Do not rush this step!

- Growing medium: Raised bed soil needs to be a light, well-drained growing medium. Achieve this with added composted organic matter to native soil. Potting mix with vermiculite or perlite may be used instead of organic matter. If native soil is clay, break it up into small bits by hand or with a tiller in one or two passes. The finished medium should consist of at least one-third native soil for nutrients and texture.
- Fertilizer: Vegetables need added fertilizer to perform well in a short season. Add organic fertilizer 2 to 3 months before planting; synthetic fertilizer can be worked into the soil at planting time and during the growing season. Follow instructions on the package. If you use a planting mix with manure or fertilizer, you may not need additional fertilizer.
- Maintenance: Add organic matter at least annually. Covering beds for winter with 2 inches of organic matter (straw, leaves, compost) helps suppress weeds. Work this into the soil in the spring.

Unframed Bed Soil Preparation

1. Spread a 2- to 3-inch layer of organic material over the soil. Rototill or spade the top 6 inches of soil to mix in the organic matter. Composted material is best. Fresh organic matter uses nitrogen to break down into a form usable for plants; this takes time and competes for nitrogen with plants.
2. Shovel the walkway areas (14 to 16 inches wide) to a depth of 6 inches; add the excavated soil to the adjoining bed. Now your beds should have about 9 inches of organic-soil mix (6 inches of tilled soil, plus soil mix from the pathway), sufficient for the roots of most vegetables.
3. Rake to level the elevated area. You will end up with a bed that is about 3 feet wide on the top, sloping to 4 feet wide at the pathway level.
4. Walk only in the pathways. Stakes at the corners of the bed prevents hose damage to beds and plants.

Framed Bed Soil Preparation

1. If the soil is heavy clay, rototill or spade soil before building a raised bed.
2. Once the bed is constructed, fill it with alternating 2- to 3-inch layers of native soil and organic matter, mixing with a spade as each layer is added. Or mix soil and organics in a wheelbarrow first, and then fill the bed. Retain at least one-third native soil in the mix, as it is a good source of nutrients and microbes.
3. Level the soil with a rake and you are ready to plant.

Watering

Keep the soil moisture even. The planting medium in a raised bed dries faster but also absorbs water faster than clay soil, so be vigilant with watering. Soaker hoses, perforated plastic sprinkler hoses, and drip-type irrigation all work well in a raised bed.

Resources

The following are just a few of the OSU Publications at *http://catalog.extension.oregonstate.edu*

- *Raised Bed Gardening* FS 270
- *How to build your own raised bed cloche* EC 1627-E

Master Gardener™ advice

- Call Home Horticulture Helpline: 503-655-8631 (Clackamas County), 503-821-1150 (Washington County), or 503-445-4608 (Multnomah County).
- For 10-Minute University™ handouts and class schedule, visit www.cmastergardeners.org.