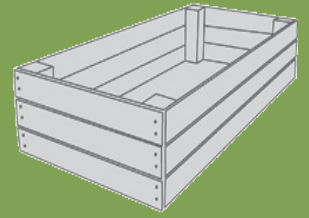




Building Raised Beds



Building Raised Beds

There are many reasons you might choose to build structures to grow vegetables, herbs, and other plants:

- To avoid toxics in soil such as lead or arsenic
- To avoid drainage problems that some soils can present
- To reduce back strain. Raised beds can be built at a good height for a wheelchair.
- To add an aesthetically pleasing feature in the garden
- To make it easier to add nutrients to the working layer of the soil
- To improve yields by reducing how much of the soil is walked on and compacted
- To clearly separate the growing area from pathways for easier weed control
- To enable gardening in paved spaces

Choosing Your Materials

When choosing materials for your raised bed, consider durability, toxicity, environmental impact, affordability, aesthetics, maintenance requirements, and how permanent or portable you want your raised bed to be.

Reused materials tend to be the most affordable. Their environmental impact is low because they don't require forestry, mining, manufacture, or long-distance transport. Find free or low-cost materials on Craigslist or Freecycle, at your local salvage yard, or in your own backyard. The Ecology Center's EcoDirectory contains Bay Area resource listings, including local salvage yards.

One low-tech method that saves money and has minimal environmental impact involves building a mound of soil and straw directly on top of the existing ground, without a structure to contain it. This method, which permaculturists favor, builds nutrients and adds tilth to impacted land. If your aim is to avoid toxics, this method might not be sufficient.

Lining the Raised Bed

You can line your raised bed to make it more durable and to prevent toxics from leaching into the soil. For lining, use landscape fabric found at garden supply stores or cloth fabric from clothing. Avoid non-porous plastic, as it can retain too much water and discourage beneficial insects and worms. A lining can make an existing raised bed safer, but if your raised bed is made of creosote railroad ties or arsenic-treated wood, it's best to remove the wood from the yard altogether to prevent continued migration of the toxics. To keep gophers and moles out of your plants, line the bed with metal hardware cloth or staple gopher/rat mesh to the bottom of the bed.

Treated and Untreated Wood

Some pressure treated wood is toxic, while some is not. The most toxic pressure-treated wood, chromated copper arsenate (CCA), can often be identified by its staple-like indentations and greenish tint, but not all types of CCA wood have these identifiers. To make matters more confusing, wood pressure-treated with Alkaline Copper Quaternary (ACQ), which is considered safe, also appears green. If the wood was bought or the structure built prior to 2003, the lumber was most likely treated with toxic CCA. To be sure, buy an arsenic test kit from your local hardware store or online.

If your existing raised beds were built with CCA-treated lumber, remove the structure to avoid the continued migration of arsenic through the yard. Even if the soil is replaced, the arsenic will migrate into the new soil. Dispose of the wood at a local waste facility as construction debris. If you choose to keep the bed, you may grow ornamental plants in it rather than food.

If you use untreated wood for your bed, use natural wood treatments like flaxseed oil or wax. Linseed oil can contain toxic additives, so it's best to avoid it. A wide variety of borate-based "washes" exist that are safer to use near food plants.

factsheet

Building Raised Beds (continued)

Determining Raised Bed Depth

Make your raised beds deep enough for healthy roots. Plants will be stunted and not produce well if their roots can't reach down far enough into soil. If the raised bed is built shallowly, the roots will venture into the ground below unless it is too compacted. A floor or barrier is needed if you don't want roots growing into contaminated soil. The recommended soil depths at right are taken directly from *Golden Gate Gardening* by Pam Peirce.

- 6 - 10 inches: basil, beet, carrot short, chervil, chives, cilantro, lettuce, onion, greens, parsley, radish, peppermint, spinach, thyme, dwarf cherry tomato, watercress, oregano, sage, marjoram.
- 10 - 15 inches: carrot, celery, cabbage, garlic, chard, leek, lettuce, mustard, oregano, potato, strawberry, dwarf patio tomato.
- 15 - 18 inches: beans, collards, cucumber, kale, pea, pepper, squash, short vine tomato.
- 18 - 24 inches: broccoli, brussel sprouts, cabbage, corn, cauliflower, tomato.

Common Materials for Raised Beds

MATERIAL	ENVIRONMENTAL IMPACT	TOXICITY/ LEACHING	DURABILITY	COST	NOTES
Soil/straw mound	Very low	None	Low	Free to low	Explore permaculture methods.
Urbanite (broken concrete pieces)	Salvaged material has low impact.	See note	High	Free to low	Concrete less than one year old can leach lime, affecting soil pH.
Brick or cinderblock	Low if reused, Medium if new.	See note	High	Low when reused	Lining the bed can prevent lime from entering the soil.
Wood logs	Low if scrap	None	Medium to high	Free to low	
Bamboo	Especially low when grown domestically	None	Medium	Moderate	
Metal siding	Low if reused	Low	Medium to high	Low to high	Line with fabric to delay rusting.
Naturally treated reuse wood	Low	Low	Medium to high	Moderate	Use nontoxic sealant on untreated wood (Flaxseed oil or wax)
Plywood, pressboard, and painted woods	High if new. Lower if reused.	Very high	Medium	Moderate	Avoid. Contains toxic components.
Pressure treated wood	High	Can be high	High	High	See section on pressure treated wood.
Redwood or cedar (new)	High, or lower if FSC certified.	Low	High	High	
Stone (new)	Can be very high	Low	High	High	
Plastic lumber	Medium (does not decompose or recycle)	Moderate	High	High	HDPE and LPE are best plastic choices.
Railroad ties	Hazardous	Very high	High	Moderate	Avoid due to toxic creosote.

Recommended Books, Websites, and Resources

The Essential Urban Farmer – descriptions of building with urbanite, brick, stone, corrugated steel, and wood.
The Vegetable Gardener's Book of Building Projects – plans and building instructions for wooden raised beds.
 Berkeley Tool Lending Library – building and gardening tools available for those with a Berkeley library card.

Washington Toxics Coalition – tips on growing food at home in a way that avoids toxics. watoxics.org
 Healthy Building Network – arsenic wood hazards and alternatives. www.healthybuilding.net/arsenic/hbn_wood_factsheet.html
 Ecology Center EcoDirectory – salvage yards, soil and compost sources. www.ecologycenter.org/directory