Select the right materials for a new raised bed

Newly constructed planters made of cedar pickets. Photo by Brooke Ortel.

Planning out next year's garden is a great wintertime activity. If you are considering adding raised beds or planters to your landscape, you might be wondering about the right materials to use for construction. Here are a few things to consider before buying supplies.

Wooden options

A well-maintained wooden garden bed can be a charming addition to almost any landscape. Designs can vary from a simple 2″ × 6″ frame to a box elevated on stilts.

However, untreated wood naturally decays when exposed to sun, water, and organic matter. Wood-boring insects like termites can also accelerate the rate at which wood degrades. Furthermore, fungi thrive in environments where wood or substrate materials are consistently kept moist (think about mushrooms!). If considering a wooden raised bed, be aware that regular maintenance and replacement are required as wooden pieces fail.

Some types of wood, such as cedar, redwood, and hemlock, are naturally more resistant to rotting. While they still decompose over time, the process occurs more slowly than with softer wood like pine.

If you choose to use natural wood, opting for thicker lumber is one way to increase the time in between board replacements. Thicker pieces of wood will naturally take longer to decompose than thinner pieces of wood.

The usable life of untreated wood can be extended by applying exterior-grade latex paint or oil. Be sure to match the appropriate fastener type (coated, galvanized, stainless steel, etc.) with the material used for construction. Some fasteners may corrode or rust more quickly than others. To prevent screws from pulling out, fasteners should be long enough to penetrate at least halfway through the second board in face-to-face applications and 1½ to 2 inches into end-grain pieces.

Pressure-treated lumber that is rated for ground contact has become standard in many building applications, from structures to fences. To combat the

If you want to build a wooden planter but are concerned about rot, cedar may be a good choice. Photo by Jedidiah Hewlett.

Purchasing a metal raised bed is another option. If leaching is a concern, especially with an older, rusted container, it is a good idea to install a liner.

decomposition process, a chemical mixture (usually a copper compound) is injected into the wood under high pressure to maximize the amount of preservative in the wood. Pressure-treated wood resists decomposition from moisture, insects, and fungi.

However, not all pressure-treated materials are equal. Avoid using pressure-treated lumber that is over 20 years old for garden beds. Use wood that is rated "for ground contact" and treated with CA-C, MCA, or ACQ.

Is treated wood safe to use for raised beds?

For a long time, gardeners were advised not to use pressure-treated lumber in the construction of planters or raised beds because of the potential for chemicals leaching into the soil. The primary culprit for this concern was chromated copper arsenate (CCA) and other mixtures containing arsenic that were formerly used to treat lumber.

In 2004, the U.S. Environmental Protection Agency (EPA) banned the use of CCA-treated wood in residential applications. Currently, alternative copper-based compounds that do not contain arsenic are used for pressure-treated lumber.

A 2021 research study conducted by Oregon State University examined if the water-soluble copper treatment CA-C, one of the alternative copper-based compounds, would leach into the soil of a raised bed constructed of pressure-treated lumber. The results of the three-year study indicated that the increase in copper concentrations in the soil were small (about 20 ppm) and only within one inch of the pressure-treated lumber. The soil concentration was still within the normal range for copper in the study area and the vegetables did not show elevated levels of copper in the plant tissues.[1]

Although the chemicals in pressure-treated lumber may leach very slowly in a garden bed, they will readily become airborne in dust particles when cut or sanded. It is a good idea to wear the appropriate personal protective equipment (PPE) during construction,

1. Visit https://bit.ly/osu-pressure-treated-wood to learn more.

Steer clear of railroad ties

Railroad ties are a pressure-treated product made using creosote or pentachlorophenol (PCP), both of which are considered "probable human carcinogens" by the EPA. Due to the health risks of having these chemicals near food, railroad ties are not recommended for use in the construction of planters or gardening boxes.

Railroad ties are not recommended for use in planters as they contain materials categorized by the EPA as probable human carcinogens.

including gloves, mask or respirator, protective eyewear, and hearing protection.

Alternatives to wood

Corrugated or flat sheet metal is sometimes chosen for the sidewalls of wooden box planters. Alternatively, all-metal raised beds made of steel or aluminum can be purchased. They are not prone to rot and pest pressures and are available in various colors and sizes.

Concerns have been raised about heavy metals like zinc leaching into the soil, especially from galvanized metal. Although some leaching and uptake may occur, there is relatively little cause for concern. The plants would likely show physiological symptoms of heavy metal uptake before it becomes a human health hazard.

The likelihood of leaching increases with more acidic soils or in instances where the soil is contacting old, rusty metal. If leaching is a concern, consider using a liner in the planter or raised bed.

As an alternative to metal or wood, molded plastic products can be used to construct planters. These products are often made from recycled plastic, and some even contain plant-based materials like wheat straw. Composite planks and beams can often be purchased at hardware stores or from landscaping suppliers. Be sure to consult with the dealer to see if these products will work for your application.

Lining materials

There are several options for installing a lining or barrier between the planter and the soil. Since many wood preservatives are water-based, painting with oil or latex paint is a good option. If you decide to use a paint-on coating, choose an exterior or marine-grade product for the best protection.

Metal roof flashing provides a durable barrier that is long-lasting and rot resistant. Rolls of aluminum or galvanized flashing are readily available at most hardware stores in various widths and lengths. Installation is straightforward with a basic set of tools and a pair of tinsnips. Trim the flashing to the appropriate size to fit inside the planter and tack in place with nails. Wear gloves and use caution when handling metal with sharp edges.

Heavy-duty plastic (6-mil or thicker) can also be used to line raised beds. Polyethylene sheeting that is commonly used for painter's drop cloth or for window and furniture coverings should work just fine. Other options include heavy-duty woven materials used as house wrap or roofing underlayment. Avoid using products made from PVC or polycarbonate, as these may contain BPA that can leach over time.

If using plastic or other non-permeable lining materials, do not completely seal off the bottom of the planter to allow for proper drainage.

Get started now

Building or repairing your own planting boxes is a tangible way to prepare for the upcoming growing season. Take time to consider sun exposure, access to water, and the space required to grow the plants you've selected. Build with materials that you feel comfortable using, are durable, and can withstand continuous exposure to soil and moisture.

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