



THE UNIVERSITY OF GEORGIA
**COOPERATIVE
EXTENSION**

College of Agricultural and Environmental Sciences
College of Family and Consumer Sciences

Raised Bed Materials

Community and School Gardens

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Selecting construction materials for raised garden beds depends on what's locally available, the type of bed to be constructed and the budget. When choosing materials, consider the overall environmental consequences of the material selected. In many situations, recycled wood is the best choice. Composite wood and masonry materials can also be used successfully under the right circumstances.

Materials

There are many choices of materials to use for raised garden bed construction. Some are more environmentally friendly than others. This publication focuses on materials that comply with most organic food production standards.

Cedar lumber is often used in constructing raised beds. It offers a natural resistance to rot and insects. Eastern red cedar (*Juniperus virginiana*) is very rot resistant and will last for years even when in contact with soil. However, the wood is very dense and can be hard to work with. Because Eastern red cedar is not grown commercially, it is hard to find -- especially in larger dimensions -- and is typically very expensive. West coast cedar (*Thuja plicata*) can be found at many lumber stores and is much easier to work with, though it is prone to splitting when using wood screws without pre-drilling. There are some environmental concerns over sustainable production practices and -- because it is grown on the west coast -- the amount of fuel required to ship it to Georgia. The cost is often four to five times that of Southern yellow pine, and there is some question as to the cedar's life expectancy when in direct contact with soil.

Cypress (*Taxodium distichum*) is native to the Southeast and more readily available in Georgia than cedar, although it is not commonly found at discount lumber stores. Its rot- and insect-resistant qualities are disputed, especially when used in direct contact with soil, but it is thought to last longer than regular pine. Ordering from a lumber store can be expensive, but if cypress is grown and milled locally, the cost is reasonable and offers a good alternative to cedar.

Pine (*Pinus* sp.) is native to the Southeast and is the most commonly available wood in Georgia. When used in construction, Southern yellow pine is one of the strongest, easiest woods to work with and is very inexpensive. Pine can be found in various grades, with No. 1 the best and least common. No matter the grade, pine has almost no resistance to rot or insects and has a very short life when used in direct contact with soil. The exception to this is pine used in older buildings. Forty- to 50-year-old pine lumber is amazingly strong, straight and dense compared modern-day pine lumber. Reclaimed wood from older barns and buildings offers an excellent alternative and one that is very "green" compared with most other materials.

Oak and other hardwoods (*Quercus* sp., *Cary* sp.) are difficult to find in large quantities or sizes and, based on most research, provide only slightly more rot and insect resistance than pine. The cost for most hardwood is prohibitive, and hardwoods are notoriously difficult to work with when they are dry.

Composite materials are increasingly popular for outdoor construction projects due to the long life and relative ease in working. Composite wood is made of wood or pulp fibers mixed with plastic resins and formed in shapes similar to dimensioned lumber. It comes in a few basic sizes, mostly sized for decking, and is very expensive -- typically three to four times the cost of common treated pine. The life of composite wood in direct contact with soil has not been thoroughly tested, but studies of effects of composite wood used for decking show that composite wood experiences many of the same forms of deterioration as traditional wood, such as cracking, discoloration, mold and mildew, and degradation in light. Studies also show the environmental cost of composite wood is higher than cedar or pine.

Masonry materials include cement blocks, brick, used concrete and stone. Of these, cement blocks are the easiest and cheapest to use. It is fairly easy to find used blocks for free or far less than retail price. Cement blocks can be stacked on top of each other to create elevated raised beds; however, walls more than two levels high should be mortared or supported in some way to avoid collapse. Used brick is often commonly available; however, stacking without mortar is nearly impossible.

Mortared walls are more secure and more permanent. Dry stacked walls are cheaper and easier to construct, but less permanent. Used concrete from excavated driveways and sidewalks can often be found for free and, if in small pieces of uniform thickness, make an excellent recycled material for raised bed walls. In some areas of Georgia, stone such as granite rubble is readily available. If the stone is angular, it may be possible to stack into walls. Otherwise, a stone wall is limited to a single level without mortar to hold it together. (Note - Chemical additives found in most cement mixes are not permitted under USDA Organic Certification guidelines.)

Raised bed kits have become popular with Internet suppliers and local garden centers. In some situations, these offer fast and easy construction of a raised bed. Most are constructed of either cheap plastic or Western cedar and are expensive compared to do-it-yourself prices. Some kits provide only the hardware, while others provide a complete package. The variety and quality of these kits vary tremendously, and buyers should be cautious when purchasing kits without full knowledge of the product.

Natural Wood Preservatives

Commercial wood preservatives have come under scrutiny in the last several years, particularly creosote and some of the copper-based, pressure-treated products (for example, green stained wood used for decks). Due to the potential problems with creosote, used railroad ties and utility poles should not be used for beds that will be used to grow food of any kind. Similar concerns have been expressed over pressure-treated wood, though current formulations appear to be safe for food production. USDA Organic Certification guidelines do not allow any of the pressure-treated wood products to come in contact with plants grown for food. That leaves very few options for treating wood for raised garden beds. The two most commonly marketed products are linseed oil and tung oil. Neither treatment has been thoroughly demonstrated to prolong the life of wood when in contact with soil.

Linseed oil is an extract of flax seed that can be used to protect a natural wood product from decay. It is important to recognize that raw linseed oil differs from boiled linseed oil. Boiled linseed oil is a mixture of raw linseed oil and synthetic solvents that may not be permitted for use in organic systems. Raw linseed oil is an inexpensive wood preservative; however, it is not as effective as creosote or other synthetic wood preservatives. Keep in mind that linseed oil is a food source for mildew, and mildew will grow on wood treated with linseed oil.

Tung oil comes from seed of the tung tree and has been used as a wood preservative. It is fairly expensive and, like linseed oil, is often mixed with harmful solvents to aid in application and soaking into wood.