

Community Garden Raised Bed Tool Kit

Raised beds are a good idea for community gardens for a number of reasons. They solve drainage problems, make weeding easier and reduce soil compaction. In addition, because community gardens are often created in urban areas where soil contamination is common, raised beds can provide a means of reducing exposure to harmful chemicals. If you use raised beds, you can avoid planting directly in contaminated soil.

There are many ways to turn a vacant piece of land into a garden. Here is how one group built raised bed community gardens from the ground up in Utica, NY.

Planning your Community Garden Layout

Use a measuring tape to determine the dimensions of the site (Figure 1).

Survey the site visually and make note of any areas with slopes or holes.

Based on your measurements, determine the approximate number and size of desired raised beds or "boxes." (For this example, we used 4-by-8 foot boxes.)



Figure 1. Measuring site dimensions

Materials

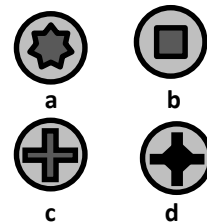
To lay out your garden

- Wooden stakes
- String
- Measuring tape

To build raised beds

- Landscape fabric (sold in 4-foot-wide rolls)
- Landscape fabric staples or "pins"
- 3" exterior grade deck screws*
- Power drill (with appropriate driver bit)
- Lumber, untreated, for boxes and braces (2x10 inch boards long enough to be cut to length for sides of boxes)
- Note: Some building supply stores will custom cut lumber and deliver.*
- Heavy duty stapler & staples
- Rubber mallet or hammer
- Clean soil and organic matter (like compost)

*We found that the screws that use a star-shaped driver (a) were easiest to use. Some people prefer square-drive screws (b). Phillips-head screws (c) are also common but are easier to damage. Another option (d) works with a square, Phillips-head, or combination driver bit.



Sketch out the arrangement of boxes, considering slopes and holes, positioned with wide paths to allow space for mowing (leave as much as 7-8 feet for ride-on lawn mowers) or weed-whacking. In this example (Figure 2), we separated the boxes' short edges from one another, although butting edges up against one another would make them stronger.

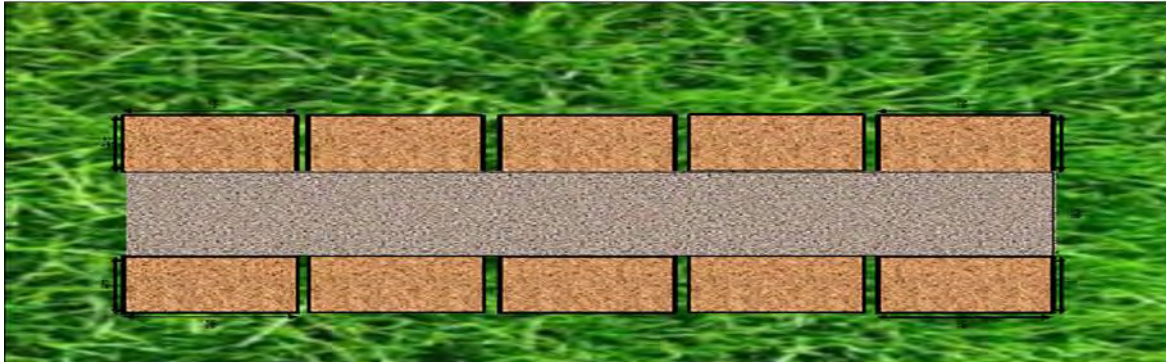


Figure 2. Example sketch of garden layout (not to scale)

Plan to avoid contamination

Before you begin, consider collecting soil samples from your site and having them tested for environmental contaminants. For more information about testing garden soil for contaminants, go to

<http://cwmi.css.cornell.edu/guidetosoil.pdf>.



Also, try NOT to put your garden beds

- Next to buildings with chipping or peeling paint,
- Under the "drip line" where water runs off a roof, or
- Right next to the road.

Building your Community Garden

With clean fill or soil, fill in any large holes where the paths or boxes will be located.

Landscape Fabric

Using string, stakes, landscape fabric and pins, and a measuring tape, you will lay down fabric where each row of garden boxes will be placed. For the paths or other areas between the boxes, you should plan to grow grass, or you should cover those areas with landscape fabric with a layer of woodchips, gravel or stone dust on top.

To lay down fabric for 4-foot wide boxes, start by staking out 4-foot wide areas over the length of the row of boxes. Then place additional stakes at equal distances from each edge of those 4 foot wide areas to leave room for extra landscape fabric to be stapled to the sides of the boxes (for example, if you allow 6 inches extra on each side, the entire width of the staked area will 5 feet wide). Tie a string tightly between the two stakes along each side of the 5-foot-wide area to use as a guide to align the fabric.



Figure 3. Unrolling landscape fabric



Figure 4. Using a mallet to pin landscape fabric

Align the landscape fabric with one of the strings and unroll it over the length of the area where the boxes will be located (Figure 3).

If you are using a long piece of landscape fabric, pin one end in place at the start (this will ensure that the landscape fabric doesn't move out of position if it is windy).

Hammer landscape pins through the edges of the fabric into the ground at intervals of 3-5 feet (Figures 4 and 5).



Figure 5. Landscape pins placed 3 – 5 feet apart

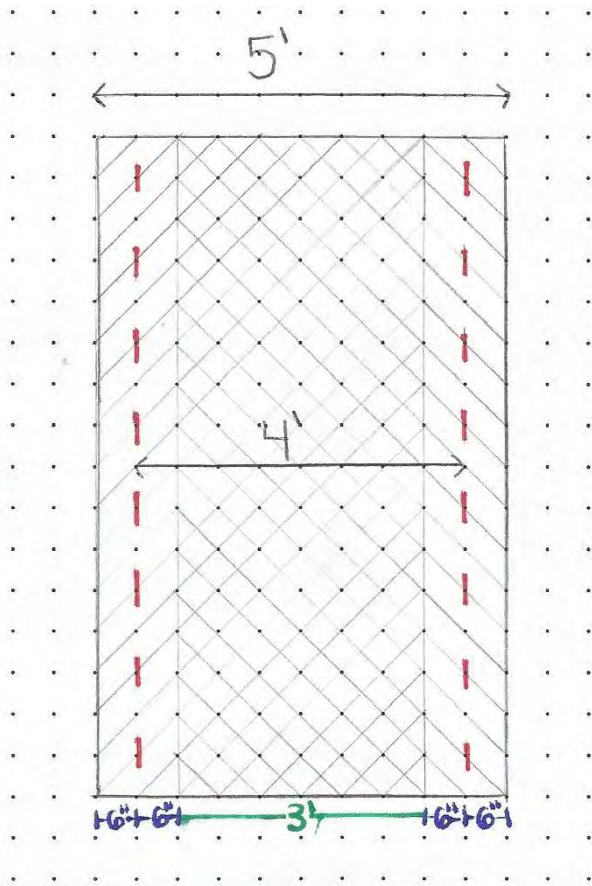


Figure 6. Overlapping landscape fabric

Align and unroll a second piece of landscape fabric along the other string along the area where you will place the boxes. The two pieces of fabric should overlap by 3 feet in the middle (double cross-hatch in Figure 6) with one foot of fabric on either side of the overlap (once the 4-foot wide box is in place – indicated by the dashed red lines in Figure 6 – there will be six inches of fabric sticking out from each side). Repeat the process of pinning the overlapping layer of fabric as described above.

Lay down fabric in this way for each planned row of boxes (Figure 7).



Figure 7. Garden site development in progress

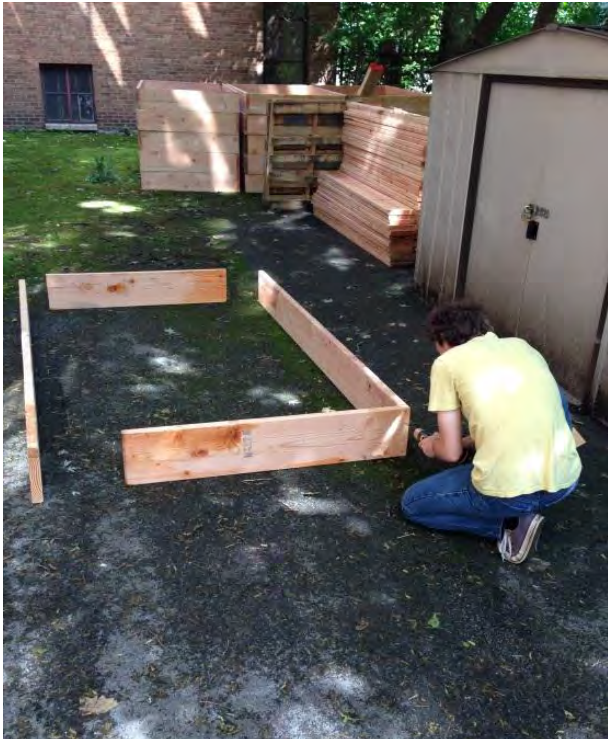


Figure 8. Construction of a garden box

Building Garden Boxes

Find a convenient spot to assemble the boxes (after the boxes are assembled, you will position them on the fabric).

Lay out 4 boards so that they form a four-by-eight-foot rectangle.

Using four screws for each corner, screw the pieces together (Figures 8 – 10).

If using double boxes, stack two single boxes on top of each other and screw one brace on each alternate side for a total of two braces per double box (Figure 11).

Important: For long term stability of the box, make sure to alternate how the corners are butted together (long side screwed to short side, then short side screwed to long side). An alternative method is to use corner posts to make stronger corners.



Figure 9. Fully constructed garden box



Figure 10. Placement of two screws in corner (four screws will be needed per corner)



Figure 11. Putting a brace on a double box. (This photo and Figure 13 are from a garden where we covered the paths between the boxes with landscape fabric, too. They would later be covered with gravel, stone dust, or other material.)



Figure 12. Lining up the boxes

Placing the Boxes

Pull up the landscape fabric pins. Carefully place your boxes in the center of the fabric leaving an equal amount of extra fabric sticking out from the edges on both sides (Figure 12). Fold the extra fabric once or twice and anchor this folded fabric to the outsides of the boxes by stapling.

Why not use treated lumber?

Pressure-treated lumber contains chemicals that help preserve the wood. When treated wood is used to frame a garden bed, those chemicals can get into the soil and even into the plants. Choosing untreated lumber can help you minimize your exposure to chemicals found in treated wood.

Isn't newer pressure-treated lumber okay?

Maybe – but the best bet is to avoid treated lumber entirely. In 2004, US manufacturers stopped using the preservative called “CCA,” which contained arsenic and chromium. Exposure to these elements can increase the risk of some health effects. The chemicals that replaced CCA do not contain arsenic or chromium, and they are generally thought to be less harmful to human health. But these newer chemical preservatives may still be able to affect soil and plants.

Are there other materials to avoid?

Don't use railroad ties or utility poles, which can be treated with preservatives that contain harmful chemicals. Reclaimed wood should be used with caution. Consider whether it might have been treated, and avoid painted boards that might be covered in lead-based paint.



Figure 13. Soil/compost mixture in box

You'll want the boxes to have a level surface to keep soil from running off when it rains. It's best to build them on level ground to start with, but if you have to build on a slope, you may need to add an extra board to the downhill side(s).

Filling the boxes

Add soil and compost to each box as follows (note that 1 single box= 4'x 8'x 9½"):

For 1 single box, nearly 0.5 cubic yards of top soil and 0.5 cubic yards of compost are needed.

Fill single boxes with a mix of 9" of top soil and compost. Fill double-height boxes with a mix of 18" of top soil and compost.

Plant your seeds and seedlings and you will have a garden (Figure 14)!



Figure 14. Utica Unity South Garden

Cost Estimation Table for 5 Double Boxes (10 single boxes)

An [interactive cost and materials calculator](#) in Microsoft Excel format is available for download at (URL)."

Material	Quantity	Cost (per unit)	Total price
Top Soil	5.0 cubic yards		
Compost	5.0 cubic yards		
Total # 8' boards needed*	30		
Whole	20		
Cut in half	10 (makes 20 4' boards)		
3" deck screws	200 screws (approximately 1 box of screws)		
Landscape Fabric 4'x300'rolls	1 roll (about 100' needed for 5 boxes, about 200' for 10 boxes)		
Landscape Fabric Staples (pins)	Less than 1 box-50 pins needed (500 per box)		

*For double boxes, you will need to calculate the additional cost for two 18" lengths of wood for braces for each double height box, as well as 8 additional screws to attach the braces.

Total Cost Estimate

Estimate costs of other miscellaneous materials:

- String: \$_____
- Wooden stakes, six: \$_____
- Measuring tape 300ft: \$_____
- Heavy duty stapler: \$_____
- Staples (5000 per box): \$_____
- Drill: \$_____
- Mallet: \$_____
- Custom cutting of wood (cutting the 8ft boards into 4ft boards, etc.): \$_____
- Delivery of wood: \$_____
- 18 inch braces (2 per double box) \$_____

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