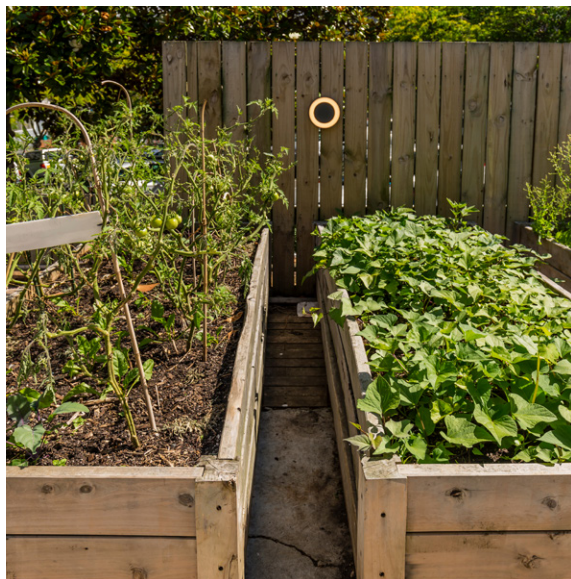


What is a Raised Bed?

A raised bed is simply a flat-topped mound of soil higher than the natural grade of your garden but having a frame – basically bottomless boxes filled with soil.

Why Use a Raised Bed?

- Traditional gardens have long rows of plants with walking space between each row (usually about 3 feet). That means almost 80% of your garden is “walking space” that has to be turned over, weeded, watered and fertilized.
- By building raised beds, you concentrate your growing area so all of it is used for plants. The same amount of plants can be grown in 80% less cultivated area.
- The soil in a raised bed is never compacted so it stays loose, easy to work and perfect for growing healthy plants.
- You can also afford to use the best soil mixture and grow plants closer together.
- This also means practically no weeding!
- Raised beds have better drainage than ground-level gardens.
- They thaw and warm up faster when exposed to sunshine in spring.
- Warm soils are better for seeding and planting, so you can start gardening earlier than you could in a ground-level garden.
- This means a longer growing season which is ideal for northern gardens.



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Planning

Location:

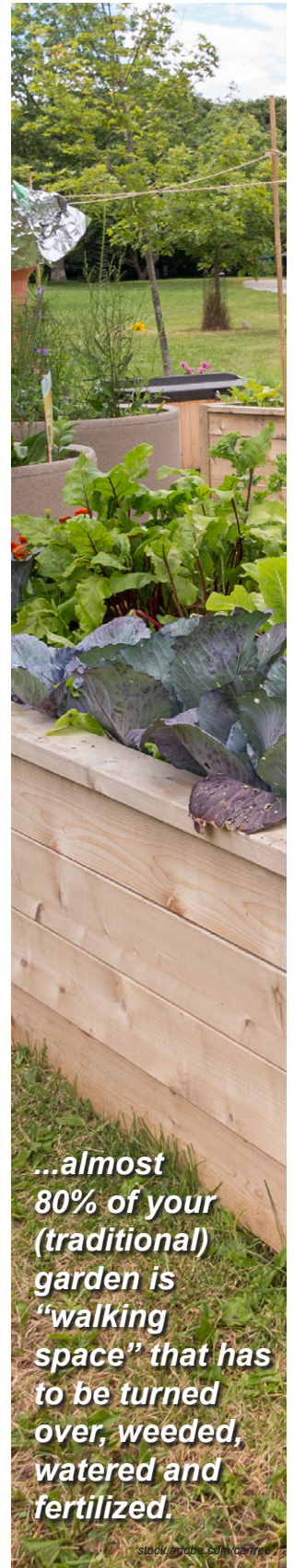
- An advantage of raised beds is they can be put wherever you have space, even in different locations.
- Try close to your house for convenience (having the garden in site will inspire you to check it more often).
- Choose a place that gets 6-8 hours of sunshine. (Some plants need more light than others so again, you can have beds in different locations.)
- Place them away from trees and shrubs where roots & shade can cause issues.
- Put them close to sources of water and out of prevailing winds.
- Avoid areas that puddle in heavy rain.



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Size

- People are comfortable reaching 2' across so this works if the bed is against a building. A 4' wide bed means you can comfortably reach from either side.
- The length is up to you – 4 x 4', 4 x 8' and so on. The available space and the size of lumber available will help you decide.
- Allow 3' walking area around each bed. This is comfortable to travel through and allows for wheelbarrows.
- How high? If you are using the best soil mixture, it only needs to be 6 to 12" deep depending on the type of plants you are growing. This means you could use a single row of 2x8" lumber for most vegetables and just stack two high for root crops.
- Think Smaller: If many vegetables only need 6" of soil and can be grown close together, you can consider a 2x4' box. Add a bottom with drainage holes and you have a portable raised bed you can carry to any location, even a deck. You can move it to suit weather, sunlight or general convenience. Maybe add wheels!



*...almost
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Construction

Materials

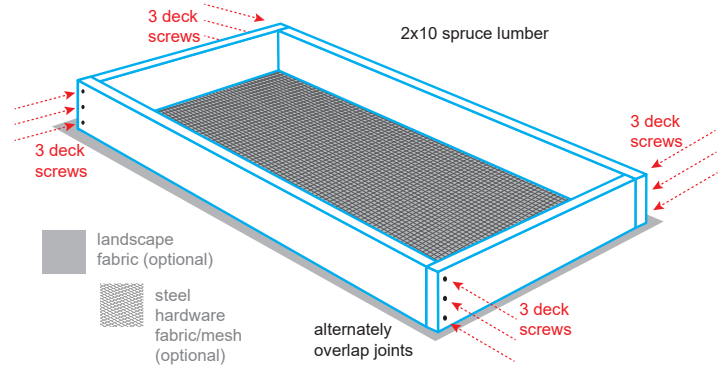
- Note that chemically treated lumber can leach those chemicals into the soil, so choose wood carefully. See <https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/fact-sheets-other-resources/staying-safe-around-treated-wood.html>
- Pine and spruce are inexpensive and work but tend to break down quickly.
- Cedar is long lasting but expensive. If cedar fits your budget, it may be a better option in the long term.
- Other framing options include man-made wood, vinyl, straw bales (for really large gardens), concrete blocks, untreated logs, interlocking bricks or stones.
- Don't forget to check construction sites for scrap lumber.

How to Put it Together;

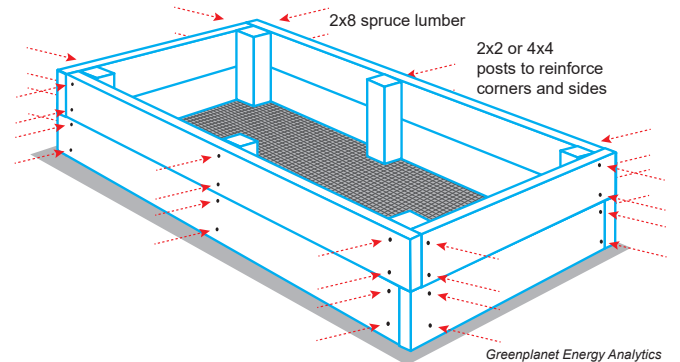
Here is an example of a 4 x 8' raised bed. Feel free to try this or do your own design with materials you have on hand.

- Lumber - three 8' - 2x8" lumber (for economical garden you can use three 8' - 1x8")
- Work on a level surface like a driveway.
- Cut one board in half so you have two 4' boards.
- Use decking screws that are twice as long as the thickness of the lumber, (4" for this example).
- Attach the corners by pre-drilling the holes to make it easier. Use 3 screws per corner and alternate the corners (see diagram at right).
- If you want to preserve the wood, you could use linseed oil. If you wish to use stain, do top, bottom and outside only. Leave the inside unstained so it does not contaminate the soil.

4 x 8' Raised Bed - simple



4 x 8' Raised Bed - deep, reinforced corners



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Soil

- It is not unusual to have less than ideal soil for gardening. It is important to build up the best soil possible for best plant growth.
- The advantage of raised beds is that it uses less soil than a traditional garden so it is easier to improve what you have.
- You can start with the soil you have and mix in whatever is lacking. See the list below.

Make Garden Soil From ALMOST Any Dirt

Prepare the dirt for gardening by identifying what type of dirt you have to start with.

General Principles

- This guide will help you design your own soil to grow the most broad spectrum of plants possible.
- This means it won't work for everything, but if you want to grow a vegetable garden, plant a tree, or plant flowers this dirt will probably be excellent for you.
- Generally, garden soil should be well draining and nutrient rich. The goal of this project is to turn whatever you do have into this, as economically as possible.

How to Mix Your Own

- To mix your soil, use any flat surface and a dirt rake.
- Use 5 gallon buckets as a measurement tool - think of them as 1 part this, 2 parts that, etc.
- Coarse sand is used to help your soil drain better, but perlite or vermiculite is even better, if a bit more costly. It will depend on your budget. (See details on next page.)

- Use compost or well composted manure for the organic material.
- These mixtures will be rich in nutrients so will not need fertilizer for a few months.

Recipes

If you have loose sandy dirt:

- 5 Gallons Sandy Dirt
- 5 Gallons Compost/ Manure
- 1 cup of 10-10-10 Fertilizer*

If you have hard clay dirt:

- 5 Gallons Clay
- 5 Gallons Sand (coarse)
- 10 Gallons Compost/ Manure
- 2 cups of 10-10-10 Fertilizer*

If you have dark moist dirt:

- 5 Gallons Coarse Sand
- 5 Gallons Your Dirt
- 1 cup of 10-10-10 Fertilizer*

*organic is best



Wikipedia

Soil Alternative

You can improve the soil you have by adding various types of compost but this can be a very time consuming project and can take a number of years of work to develop something suitable.

If your budget allows, you can avoid this and purchase the ideal mixture right from the start. (Remember, raised beds require less soil so the expense can be kept to a minimum.)

- 1/3 peat moss
- 1/3 vermiculite
- 1/3 blended compost (you can buy compost if you don't have your own)

This produces a mixture that drains well but holds enough moisture and is easy for plants to grow roots through. This mixture rarely requires fertilizer. Just add compost to renew the nutrients.

Perlite appears as tiny, roundish white specks. It is made from volcanic glass that is heated to 871 Celsius where it pops much like popcorn and expands to 13 times its former size, resulting in an incredibly lightweight material.



Vermiculite is an all-natural mineral product that is mined out of the ground that is usually light-brown, gray, or gold in color. It may have shiny flakes, and/or small accordion-like pieces. (Vermiculite does not contain asbestos.)



Both are used to introduce air into the soil, keep it loose and are good at retaining water. However, vermiculite acts more like a sponge, holding more water and nutrients in the soil than perlite but offering somewhat less aeration for the plant roots. Neither decompose over time.

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Final Assembly

- Cut grass and weeds if any. You can remove sod if you wish but not really necessary unless you need to level the ground.
- Lay down landscape fabric and cut to the outside dimensions of the frame. (If you have problems with voles or other burrowing animals, you can cut a piece of 1/4" steel hardware cloth the same size and place it over the landscape fabric.)
- Place frame over top and add soil mix until it covers the bottom.
- Water the soil and repeat until the frame is full to within 1" of the top of the frame. (The watering in-between helps settle the soil quickly.)
- Finishing: The aisle space around the beds can be left in grass, which you will have to mow, or you can cover with mulch or paving stones to prevent weeds.
- Provide supports for climbing vines like peas.



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Extend The Growing Season

- Cover beds with clear plastic sheets in early spring to warm the soil before planting. Clear plastic does a better job of warming soil than black or white plastic. Remove the plastic before planting.
- Install tunnels or build frames to hold plastic to cover growing areas. This can prevent insect problems and extend the growing season, spring and fall.
- Another method to keep soil warm is using individual covers for your vegetables like cloches, hot hats or plastic milk jugs.



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Planting

Spacing

Since you are not planting in rows, you just have to space the seeds apart as directed on the packet. You can ignore the row spacing instructions.

If thinned to	You can plant this many per square foot
12"	1
6"	4
4"	9
3"	16

Save on Seeds

The seed packets tell you to wait until sprouts grow to a certain height and then “thin” them to a certain distance. Why not just plant the seeds at that distance in the first place? Consider planting 2-3 seeds per hole spaced as needed to save seeds and time.

Companion Planting

- Certain plants, when grown together, improve each other’s health. By planning which plants go best together, you can increase your yields. For example:
- Some plants attract beneficial insects that help to protect a companion, while other plants will repel harmful insects.
- Plants that require a lot of the same nutrients as their neighbors may struggle to get enough for themselves, so it helps to avoid planting them together.
- Some plants release nutrients and other chemicals into the ground that could benefit other plants.

Some examples of companion planting would be

- Plant beans, which enrich the soil with nitrogen, with corn, beets or cabbages that are all heavy users of nitrogen.
- Marigolds have an excellent reputation as a pest deterrent, so plant them freely throughout the garden.

There are many guides available on-line. Here is a sample:

Companion Planting Guide

<https://www.almanac.com/content/companion-planting-guide>

Watering

- Watering using only a watering can is not recommended as this tends to water only the very top layer of the soil, which encourages shallow roots. Using a hose is better.
- Your plants are healthier if deep rooting is encouraged, so water deeply but infrequently. Apply 2.5 cm (1”) of water every week (unless it rains).
- An easy way to measure is to place some empty tuna cans under the sprinkler. When the cans are full, you have watered enough. Be careful to not over-water.
- Drip irrigation is a very efficient way to water your vegetable garden. (See photo at left.) You can install the tubing and emitters before you install the mulch.
- Another possibility is setting up a wicking bed. (See Links.)

Mulch

- Mulch prevents weed, helps retain moisture and improves the health of your soil.
- To be effective, place at least 10 cm – 15 cm (4”- 6”) of mulch on top of your soil.
- For vegetable gardens, shredded leaves, herbicide-free grass clippings, straw or shredded newspapers make a good mulch. Shredded bark is a good mulch especially for permanent paths.
- Add an annual 3 – 6 cm (1” – 2”) layer of compost on top of the soil before planting and mulching.
- Keep mulch off your plants by placing a cardboard tube slit lengthwise around the stem of seedlings (i.e. tomatoes, peppers etc.) before spreading the mulch. Mulch touching the stem of your plants can lead to rot.
- If you are seeding, leave soil bare temporarily. Cover bare soil with mulch after the seedlings come up.
- Mulch helps protect perennials over winter.

Useful Links

Six Ways to Build Raised Garden Beds - Mother Earth News

<https://www.motheearthnews.com/organic-gardening/build-raised-garden-beds-zmaz85mazsie>

How to Build a Simple Raised Garden Bed - Good Housekeeping

<https://www.goodhousekeeping.com/home/gardening/g20706096/how-to-build-a-simple-raised-bed/>

The Square Foot Gardening Method

<https://squarefootgardening.org/2017/07/our-method/>

How to Build Raised Beds for Next to Nothing - Mother Earth News

<https://www.motheearthnews.com/diy/how-to-build-raised-garden-beds-for-next-to-nothing-zbcz1606>

Make Garden Soil From ALMOST Any Dirt

<https://www.instructables.com/id/Make-Garden-Soil-from-any-Dirt/>

No-till vegetable gardening for home gardens - University of Saskatchewan

<https://gardening.usask.ca/articles-how-to/no-till-vegetable-gardening-for-home-gardens.php>

Build a Raised Garden Bed Cover - Popular Mechanics

<https://www.popularmechanics.com/home/lawn-garden/how-to/a9086/build-a-raised-garden-bed-cover-15566073/>

A DIY Guide To Wicking Beds - Verge Permaculture

<https://vergepermaculture.ca/2011/05/30/guide-to-wicking-beds/>