

What is a Wicking Bed?

A wicking bed is a type of raised garden bed that sits above ground and is “self watering”. It has a built in water reservoir that provides all the water that the plants need for 3-4 weeks.

How it Works

- In a wicking bed, water travels or “wicks” up from the reservoir towards the top of the soil where the plant roots are.
- This happens because the water reservoir is full of gravel which acts in the same way that a sponge works when soaking up water from a counter top; the bottom of a sponge “pulls” water up from the countertop.

This is known as “capillary action”.

- “Garden wells” are a gravel substitute that are specially designed for wicking beds. They are filled with vermiculite and are more effective at wicking than gravel. They make the beds easier to build and weigh a lot less. (The supplier is listed under Resources.)

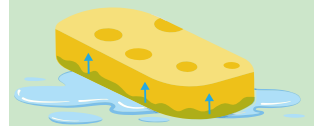
Basic Design

A wicking bed is made up of:

- A box - often made of wood but other containers are possible (like food grade plastic bins or IBC totes for large scale.)
- Waterproof liner, if needed.
- PVC pipe that extends from the surface of the soil and down into the water reservoir. (You can also use flexible perforated drain pipe for larger projects.)
- Washed gravel to fill the water reservoir - 4” or more depending on the size of the bed.
- Landscape fabric laid over the gravel.
- Above the fabric goes 10-20 inches soil.
 - The layer of soil should not be too deep otherwise the water may not wick far enough from the reservoir.
 - Use a balanced soil mixture; 33% peat moss, 33% vermiculite and 33% organic compost and worm castings
- A bulkhead fitting (drainage hole) inserted into the side of the box so it is level with the top of the water reservoir.



Capillary Action - the ability of a liquid to flow in narrow spaces even against gravity. It is caused by the attraction between the molecules of the liquid and the solid. These forces are weak so the space has to be small.



The effect can be seen when water is pulled up into a sponge or paint is drawn up into the hairs of a paint brush.

This is also how living cells can move liquids like plants pulling water up from their roots.

WICKING BEDS: Low Maintenance Year Round Gardening

Water via standpipe

Water wicks up from the gravel reservoir and into the soil via capillary action



Water exits via bulkhead when reservoir is full (stop filling!)

Easy to Use + Low Cost
Conserves Water
Water Once Every 2-3 Weeks
Use Outdoors and Indoors

Benefits

- Ease of Use
 - To fill the reservoir with water, simply pour water down the pipe.
 - Stop filling the reservoir when water begins to exit from the bulkhead fitting.
 - You will only need to fill the reservoir with water once every 2-4 weeks - "Vacation safe".
- Low maintenance
- No electrical components



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What is Easy to Grow

- As with any form of growing, herbs and leafy greens are the easiest to grow in a wicking bed.
- Root crops and fruiting crops can also be grown.
- Beets and tomatoes are easy varieties to begin with.

Indoor Wicking Beds

- Wicking beds can be used indoors during winter or all year round if you do not have access to an outdoor growing space.
- If you would like to make your wicking bed portable, you will need to custom build a base and add wheels.
- If you are using your wicking bed during the winter or do not have access to a bright window in summer, you will likely need a "full spectrum grow light".
 - Construct a framework to support the lights above the bed.
 - Determine how many lights you need; low light plants generally refers to leafy greens and high light plants refers to fruiting crops (tomatoes, peppers).
 - LED grow lights give maximum light for minimal energy.



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Operation

- In order to "activate" wicking action you will need to pre-soak your soil before filling the water reservoir.
- Add fertilizer to your wicking bed approximately every 2-3 months (after each harvest of crops). Generally speaking, a handful of organic compost per square foot and one tablespoon of all purpose slow release organic fertilizer per square foot should do.
- Bugs can become a problem with any form of indoor growing and you will need to frequently inspect your plants for plant pests such as aphids.

For More Information

A DIY Guide To Wicking Beds - Verge Permaculture

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

What a 'Food Is Free' Project Wicking Bed Garden Looks Like - Mother Earth News

<https://www.motherearthnews.com/real-food/food-is-free-project-zbcz1407>

Video: Food is Free Project: How to Build a Raised Wicking Bed! - Food is Free Project

https://www.youtube.com/watch?v=wiNoxeA2sD8&feature=emb_title

How to Make DIY Water-Efficient, Wicking Beds With Upcycled Materials - One Green Planet

<https://www.onegreenplanet.org/lifestyle/diy-water-efficient-wicking-bed-upcycled-materials/>

Wicking Worm Beds - Instructables

<https://www.instructables.com/id/Wicking-Beds/>



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