



Building and Managing Self-watering Gardens (Wicking Beds) Kimbriki Eco House & Garden

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- A wicking bed is a garden with a water tank at the base.
- Designed so the water ‘wicks upwards’ into the soil, like a candle wick.
- These gardens are self-watering, great when you are not home.
- 60-80% less water used than conventional garden beds.
- There are commercial wicking beds on the market which are great, and in this workshop you can also learn how to make your own.
- An ingenious and successful way to grow your own healthy organic food at home.
- It is almost a ‘revolution’ in how we can more successfully grow some of our own healthy organic food.



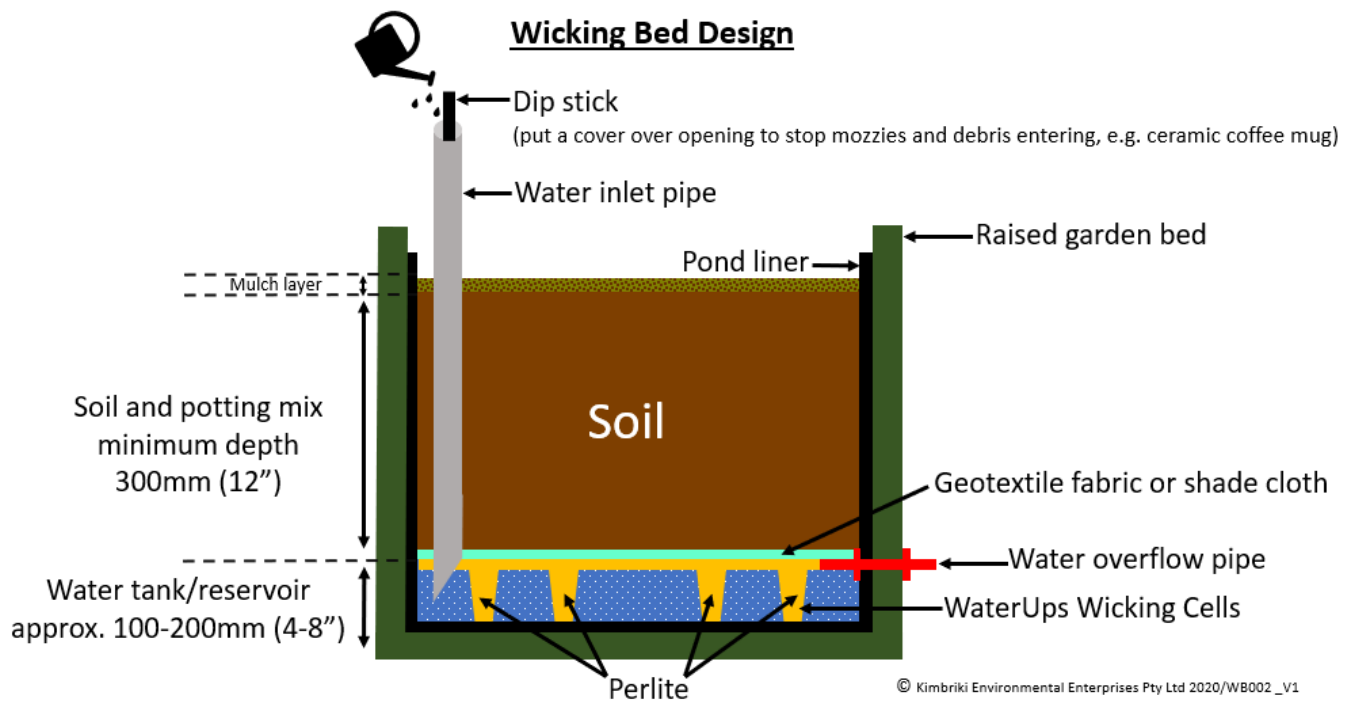
How Do Wicking Beds Work? - Water Moves DOWN & UP!

Most gardens get watered from the top by natural rainfall or by human watering. This water moves **DOWN** through the soil, and some is held in the soil by the various particles in the soil. This process is called **adhesion** and is the attraction between two DIFFERENT substances (think of adhesives). Excess water drains out of the soil.

Then there is the movement of water **UP** via a process called **CAPILLARY ACTION**. This happens in the small tubes inside plants but also happens in the small spaces between the various particles in the soil. This movement of water UP against the force of gravity is a combination of two forces, **adhesion and cohesion**. The water is attracted to the soil (humus) particles by **adhesion** and then the water pulls more water with it through a force called **COHESION** (which is attraction together of the same substance – water molecules).

In a good organic soil, water will capillary up about 30 centimetres (maximum) from the source of water below. Therefore, the depth of soil in a wicking bed should be about 30cm.

Understanding & Applying the Key Principles of (Self-watering) Wicking Beds



1. A 'space' to hold water

Recommended to be 10 to 30cm deep.

2. A wicking 'medium' in the water holding space

We recommend Perlite (medium size) as the most efficient medium to 'wick' the water up to the soil. Perlite is made from a mineral called obsidian and has thousands of tiny 'wicking holes' in its structure (it is NOT plastic). Scoria and other gravels can also be used as the 'wick' but they 'displace' water holding space.

3. A direct inlet pipe to fill up the water space (PVC is useful for this)

Ensure pipe is long enough to go from base of water space to several inches ABOVE top of soil. Drill some holes in bottom few centimetres of the pipe. Secure gauze or stocking over the bottom end of the pipe to stop wicking medium coming out. Cover top inlet hole with a cap to stop anything falling in and to stop mosquitoes.

4. Optional – A water level indicator (dipstick) for the water tank

This is optional but will give peace of mind knowing exactly how much water is left in the tank.

5. An overflow pipe at the top of the water holding tank

MUST be BELOW the soil to ensure soil above is never too wet. Secure gauze or stocking over the inside end of the pipe, to stop wicking medium coming out.

6. A separation layer between the water space/wick, and soil above, to keep water space free from soil. Must let water through and not rot over time

Geotech drainage matting is very good.

7. Soil to approx./minimum depth of 30cm, above the water/wick

Note: Be careful not to allow soil into your wicking/water zone.

Use a high quality potting mix (coconut fibre based), combined with some rich soil, compost, worm castings, manures, etc. as used in any vegie garden.

TRY: Australian Native Landscapes (ANL) "Premium Potting Mix" with ANL "Super 6". Mix these in ratio of 4 parts Potting Mix to 1 part Super 6. These bagged products are available at ANL Terrey Hills.

Planting a Wicking Bed

1. Plant seeds or seedlings as you would in any new garden bed. Tip: plant seedlings roughly 8-10cm apart. Thin these out later and eat the young plants you thin out.
2. **Water** in well after planting.
3. Apply a thin layer of **mulch** to the surface, e.g. sugar cane, lucerne, etc.
4. Water plants from the **TOP for the first week** or so after planting, until the plants are 'standing up' and looking vibrant.
5. **STOP watering from the TOP** to encourage the plants to send their roots down to the moisture, which is 'wicking-up' from the water tank.
6. Now water from the **BOTTOM**. Check the water level in the tank regularly, **especially in hot weather**. Fill up the tank as required, until water is flowing out your overflow pipe.
7. It is **okay to water from the top** if your plants seem stressed on very hot days, and it is ok if rain falls on your wicking bed, but as your main practice – keep your plants watered from the **BOTTOM!**

Managing Plant Health and Harvesting

1. Always **take out or cut off any dead leaves or sick-looking** plants (daily or weekly).
2. Use a **FOLIAR FERTILISER** every 10-14 days e.g. liquid seaweed and liquid fish products mixed at correct rates. Foliar feeding refers to feeding plants by spraying liquid fertiliser onto the foliage (leaves) of the plants. You can also apply with a watering can. Note: usually wait 24 hours after spraying, before eating produce.
3. Train your climbing plants as they grow, e.g. cucumbers, beans, peas, etc.
4. Harvest leafy annual plants by taking off the **OUTSIDE** leaves to eat. The new leaves in the **CENTRE** of the plant will then grow quickly, and then a week or more later you will be able to again harvest more **OUTSIDE** leaves to eat (silverbeet, spinach, non-hearting lettuces, parsley, coriander, etc.).

Maintenance In-between Crops

1. Take out dead plant and root material.
2. **Dig and 'fluff-up'** the soil to depth of 10-20 cm. Note: be careful NOT to dig into your wick zone.
3. Add some more worm castings, or mature home compost, or Super 6, or cow manure, or a combination of these. Mix these into the top 10-20 cm.
4. Water in.
5. Add some fresh mulch to the surface.
6. **Let the soil 'rest' for a few days (recommended).**
7. Plant new seedlings or seeds - following "planting a wicking bed" points (above).

For more information
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