Building a Wicking Bed

Workshop Notes

Sunday January 25\textsuperscript{th} 2015
1.00 to 4.00 pm

A wicking bed can reduce water use and watering frequency, perfect for a changing climate.
What is a wicking bed?

A wicking bed is an enclosed system that has a reservoir of water at the bottom of the bed which keeps the soil/compost in the top of the bed moist by capillary action. This system of gardening can be adapted to big or small garden beds and have above or below ground construction. The smallest bed can be a pot or polyfoam box, but to be truly effective the soil/compost layer should be greater than 30cm in depth.

Benefits of using a wicking bed

- The wicking beds are more expensive and take more time to construct, however the benefits outweigh the negatives. The wick garden beds offer many benefits over normal garden beds. The wicked raised garden beds can be built on top of poor soil.
- There is less watering maintenance, as water is stored under the plant roots.
- The vegetables have a higher chance of survival during intense hot summer conditions.
- Raised beds become warm faster than normal garden beds, to allow vegetables to grow more quickly in spring and longer in autumn.
- Plants remain alive if not watered daily therefore needing less care. This is great if you want to go away for a few days.
- Nutrient is not loss to the subsoil when the garden bed is watered.
- The wicking garden bed are ideal for heavy feeders and quick climbers, such as corn, pumpkin, cucumbers, peas, beans and tomatos.
- The wicking system can be adapted for aquaponic systems, where the water is constantly flowing in the drainage material.

Wicking bed construction

Your wicking bed can be a wooden box (say a reinforced old fruitbox), an old bath, a water container such we are using, or can be a trench dug into the ground. It needs to be sited somewhere level and stable—it will quickly become very heavy! And it needs to be level to work properly.

If the bed framework is porous—wood or a soil trench or similar, it will have to lined with a waterproof layer.

Heavy duty plastic such a dam or pond liner is suitable. Don’t forget this stuff is usually not UV stabilised, so exposed areas will break down over time and need to be replaced.

If your container is rough or has sharp bits or stones it will need to be lined before the plastic is used. Use old carpet or underlay, an off cut of builders blanket insulation or other thick soft material that you have to hand. Sand is suitable for trench beds.
The bed consists of a layer of gravel, scoria, sand or other drainage material with a water delivery pipe embedded in the material and also extending to the top of the bed. PCV drain pipe type material is suitable. Using recycled offcuts is ideal, as generally short lengths are needed. A cap prevents mosquitos from breeding. Larger wicking beds need a slotted pipe to deliver water to all parts of the bed effectively. The drainage layer should be one third of the depth of the bed.

Two drains are necessary in the bed, one at the level of the bottom of the growing medium so the bed does not become waterlogged, and one at the bottom of the water well to allow monthly flushing out. The bottom drain needs a tap so it can be closed off, but the drain at the junction of the mediums should be always open to keep the water below the level of the growing medium. It can be covered on the inside with some shade cloth to keep the drainage material in if it is fine enough to escape through the drain. Place a layer of shade cloth or similar between the drainage layer and the soil layer to prevent intermingling.

The growing medium can be potting mix or soil with layers of lucerne hay, compost and lime (similar to the construction of a ‘no dig’ garden). This layer should be two thirds of the depth of the bed. Mulch completes the bed.
Watering your wicking bed

The wicking bed needs watering from above in the first instance. The soil will take a little while to start to wick by itself, just keep an eye on it. Then you can top up the water every few days as needed. During periods of heavy rain you can leave the bottom tap open, just remember to close it as the rain stops!

Helpful ‘rules’

- The soil depth must be a minimum of 30cm deep, shallower soil or potting mix will be constantly water logged. This creates an acidic and putrid condition without oxygen, which does not support most plant growth.

- The initial soil must have lots of organic matter to absorb the water and have a high water holding capacity.

- There must be two overflow pipes, one at the bottom of the container to flush to stagnant water and accumulated salts. The other pipe is to ensure the water is flushed out below the soil level to prevent waterlogging.

- Water needs to be flushed out periodically, once a month. In wicking garden beds the flush pipe can be left open during heavy rains.

- It is still important to mulch the wicking bed surface to reduce evaporation.

- You can grow mineral accumulators in your wicking bed to help absorb the salts, these are borage, comfrey and most of your weeds such as dandelions.