

## WICKING GARDEN BEDS - the principles and the practice

The concept of the **WICKING GARDEN BED** has been formulated by Colin Austin

### WHY WICKING BEDS?

- More efficient use of limited water resources
- Increased opportunity for food production in “difficult” areas. For example, in built up areas where there is no soil or areas where there is too much “root competition” from surrounding vegetation.
- May also help with CO<sub>2</sub> sequestration

### THE PRINCIPLE

There are two forces acting on a column of water—**SURFACE TENSION FORCES** which “pull” the water column up .... and the **FORCE OF GRAVITY** which “drags” the water column down.

Water will move up a capillary tube until the “upward” pulling **surface tension forces** are balanced by the “downward” pulling **gravity force**. This is **equilibrium**.

The narrower the capillary, the further up the water will move. The spaces between the soil particles form a network of very very small capillaries through which water is able to move.

**It has been found that on average, water will move by capillary action (WICKING) to a height of about 300mm in soil.**

So if there is a reservoir of water beneath about a 300mm depth of soil/compost, water will “wick up” to just below the surface and the soil will remain permanently moist.

As plant roots take up water from the soil zone, more water is drawn up by capillary action (“wicking”) from the reservoir below to replace it. This means that plant roots have a continuous supply of moisture.

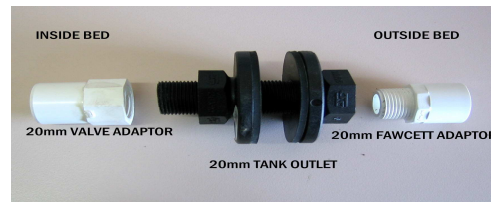
### THE PRACTICE

#### BASIC REQUIREMENTS FOR A WICKING BED

- Raised enclosure (bed) whose sides are about 600mm high (certainly no lower than 300mm)
- Builders plastic at least 200um thick and large enough to fully line the bed. **It is essential that this is water tight.**

- Water inlet pipe—50mm diam pvc and about 200 mm higher than the side of the bed
- 90° pvc elbow— fitted to bottom of water inlet pipe (can be glued )
- Length of 50mm slotted agricultural drain pipe to fit the length of the bed
- 50mm blue “joint couplings” which fit on the ends of the slotted pipe
- 50mm pvc end cap
- 50mm semi-circular bracket to fasten inlet pipe in position
- Shade cloth the same size as the area of the bed

#### Overflow structure:



#### Fill material:

- 14mm scoria—sufficient to just cover the base of the bed and the slotted drain pipe
- Compost rich soil to fill the rest of the bed

#### NOTES

- To determine whether the bed needs water, a dip stick can be put down the inlet pipe and the depth of water can be compared to the height of the outlet pipe above the base of the bed. Watering should only be required about every couple of weeks.
- When seeds or seedlings are first planted they must be hand watered from above until the roots become established
- The depth of the reservoir can vary, but the soil depth above the outlet pipe should always be close to 300mm

#### WEBSITES

[www.waterright.com.au](http://www.waterright.com.au)  
[www.sgaonline.org.au/?p=3526](http://www.sgaonline.org.au/?p=3526)  
[www.maireid.com/wickingbeds.html](http://www.maireid.com/wickingbeds.html)  
[www.greensmartpots.com.au](http://www.greensmartpots.com.au)  
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