

## Simple Techniques for Water Management

- Soil Improving
- Mulch
- Worms
- Plant Selection
- Landscaping
- Grey Water Recycling
- Water Harvesting
- Zoning
- Irrigation

### Improve your soil structure

Soils are more delicate than we think & can die if exposed to extremes. Constant ploughing, or turning and exposure to sun can destroy microbes & bacteria that are essential for healthy soil structure, which in turn will enhance water retention & distribution.

### Mulch

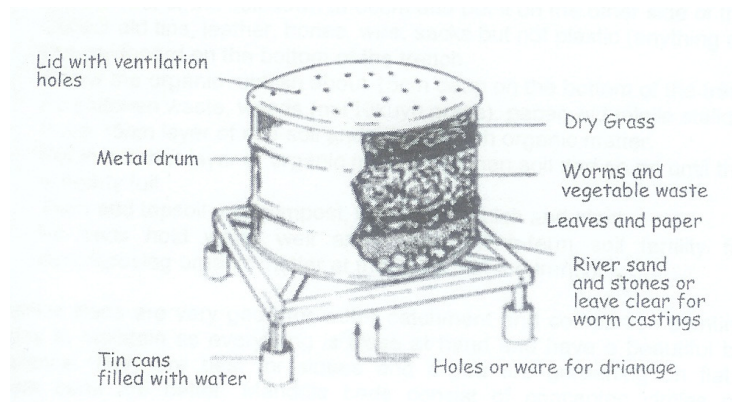
An effective way of achieving this is to cover the soil with a thick layer of mulch - decomposed organic matter. Ensure that it is well rotted, as it may otherwise leach essential minerals out of the soil during decomposition. If using grasses or other green waste, ensure that it is no longer green. Try to avoid freshly chipped wood, for the same reason. If this is the most sustainable for your purposes, ensure that you improve the soil before hand to prevent any mineral loss to your mulch. And when you are ready to apply another layer, just dig the old one in. A good layer of mulch will reduce evaporation, and warm the soil beneath - effectively increasing microbial activity. This will in turn attract the worms.

### Earth Worms

Worms are great in the garden for 4 main reasons. Regular earthworms will:

- Aerate the soil (naturally rather than ploughing or turning)
- Make channels to allow for deeper water penetration
- Drawn organic matter with them to deeper layers

For composting use brandlings (*eisenia foetida*). The castings that they leave behind are high in vital nutrients - helping to improve the soil structure. You can take the easy route and buy a layered worm bin for your kitchen waste from your local nursery.



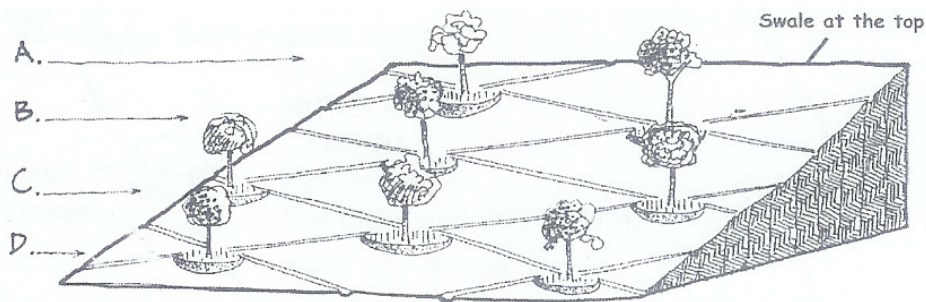
## Plant selection

Plant selection: Understanding your environment is key to the health of your garden, and should reduce the need for constant watering. Select hardy or even drought tolerant plants or crops. Young plants will naturally require more water until reaching their 3rd growth phase - until they are juveniles. Over watering will weaken them, and make them more susceptible to attack, and reduce air to the roots. By zoning your areas effectively you can ensure that those plants needing more water are placed closer to your drainage or water but.

## Landscaping

If you are on a slope - then it is most important to prevent rapid run-off which will wash your top soil away and create erosion. To combat this you might try a number of systems:

- *Terracing* - for particularly steep slopes
- *Swales* - for less pronounced inclines - dig trenches along the contour of your slope. This reduces run off and ensures that excess water permeates to plants at the lower level, or into the groundwater supplies.
- *Net & Pan* - a diamond design usually used in orchards - with drainage channels from one line to another



NET AND PAN (Plan).

A-B: Trees that need plenty of water B-C: Trees that require moderate water

C-D: Hardy species requiring minimum water

The contour of your garden can be measured and plotted using a simple A-frame.



MAKING AN A-FRAME

## Grey Water Recycling

This is far easier if your bathroom or kitchen waste pipes are directed towards your garden. Organisms in the soil can cope with a remarkable amount of contaminants, but use environmentally friendly detergents, shampoos and soaps. Even if you are not grey water recycling - avoid all bleaches (especially those which boast of killing all known germs - dead). You can make your own filtration system by layering a grease, or loose waste trap, & a sand or rock layer. The plants immediately exposed to the grey water should be purifying plants which filter additional contaminants - such as comfrey, red hot pokers, watercress or mint. This water would then ideally run down to wetland plants such as papyrus, bulrush, common reeds and/or trees. If you are planting edibles at the end of the tract - ensure that these are fruit trees and not root vegetables. [www.gardenafrica.org.uk](http://www.gardenafrica.org.uk)

## Water Harvesting

Waste nothing! Gutter as many roofs as you can - even the garden shed. It doesn't have to be expensive - look around you and see what waste materials are available - you'll be amazed at what you find in skips these days.

Harvested water is simply the best water for your plants, as it is untreated. You can buy a water butt and attachments from your local garden centre, or try making one yourself out of a plastic bin or oil drum (though the latter will deteriorate over time). Drill a hole in your down pipe and angle a piece of sliced bamboo to direct the water into your container.

It may be important to catch all you can when the rains do come, so think about an additional overflow facility. This could be a sunken bin or drum (to reduce evaporation). You could also consider digging a pit and line it the appropriate mixture of sand & cement. Salt added to the mix will make the lining waterproof. Voila!

## Irrigation

Never water during the hottest times of the day. For those with a tendency for using sprays, be aware that much of this will have evaporated long before it ever reaches the roots. If you are in need of more directional watering - go for a drip irrigation system or, even better, porous pipe underneath your mulch. These 2 methods are the most water efficient, and ensure better absorptions where it is most needed.

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Many of these techniques are also effective for the weak and/or elderly - designed to be low input to conserve your energy, and *all* are easy to implement. So what are you waiting for?

If you think that this resource has been useful, just think what it can do for so many others without easy access to essential resources. You may even consider making a regular donation to GardenAfrica via our website, where over 90% of your donation will go directly to training in the field, creating opportunities for those who need it most.

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GardenAfrica / Wren Cottage / High St / Burwash / E Sussex/ TN19 7HA  
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