

## Water Management

PSSS...Protect, Sink, Save & Store

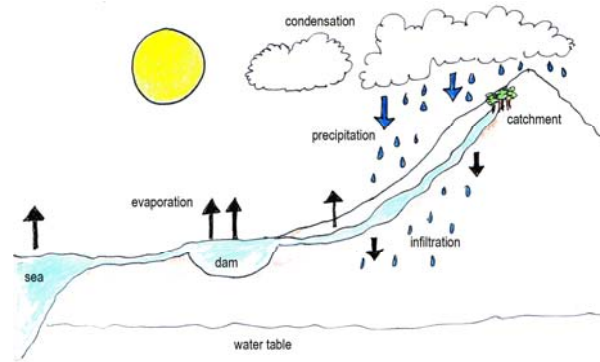


Think about what you can do to use water more effectively, and how much money you will **save** if you capture and store it to produce your own food.

Illustrations by:



The **water** cycle involves a series of processes. Evaporation (**water** loss) from sea, rivers & land, results in precipitation (rain) which usually falls on higher ground, and then flows down streams into lakes, with some **sinking** underground to be **stored** as ground water reserves.



We can all see that water is becoming scarcer. One of the reasons for this is that the **catchment** areas where the rain falls used to be covered in vegetation which is now being cleared. We need to **protect** these **catchment** areas so that the water is **sunk** by trees and other vegetation, allowing water flows into our rivers and streams. Heavy rains now result in rapid surface run-off, soil loss & flooding.

A lot of our **water** is wasted, with only a small amount being recycled. Waste **water** can be put to better use – cultivating food & medicinal plants in our own gardens, for health and livelihoods.

### Irrigation – watering your plants

**Water** is one of the most important **elements** for growing plants in our gardens, so we need to learn to **irrigate** correctly. Here are some tips about how you can irrigate efficiently - also saving you time:

- In summer, **irrigate** in the late evening once the sun has gone down. This will give the **water** time to **sink** into the soil before the sun rises again.
- In Winter, **irrigate** early in the morning to prevent the plants & soil from getting frosted at night.
- If the soil is dry when you push your finger about 3 cm into the ground, then it is time to **irrigate**.

- A good **soaking** is better than watering the surface often. This will improve root growth and **prevent evaporation**.
- **Mulch** will also reduce evaporation, nutrient loss, weed growth & improve soil health.
- Once your plants in ZONES 3-4 are established, much of your irrigation will be focused on ZONE 1 to **save time, water and energy**.

### WARNINGS

- *Don't over water your plants. This will prevent air reaching the roots & they will rot.*
- *Irrigating in the heat of the day increases water evaporation which can leave salty deposits that, over time, will ruin your soil.*

### The benefits of mulching

Remember to lay a heavy mulch over your beds, around your plants. Use newspaper, cardboard and/or green waste (such as maize straw/grasses). Mulch will reduce evaporation & soil loss during heavy rains, and will prevent weeds growing, **saving** you valuable time to get on with other jobs.

(See the **SOIL** leaflet for do's & don'ts)

### Watering Your ZONES

**ZONE 0 & 1** - Run-off from your roof, **grey water** or tap, can be directed into trenches toward your garden. This will prevent heavy rains damaging your home, its foundations, and/or washing away your valuable top soil. **Swales** (see next page) will ensure **water** transfer from one **zone** to another.

**ZONE 1&2** Surface sprinklers can be useful. Attached to a hosepipe they can be moved to whichever area you need, and provide good, even watering.



**ZONE 2** - The most cost effective way of **sinking and saving water** in your soil is to use a recycled container. Place a few small stones into the bottom to stop the sand blocking up the holes, and add water via the lid as needed.

**ZONE 3 & 4** – Drip Irrigation is achieved through a porous hose pipe. These can be expensive – but the same effect can be achieved by using an old leaky hosepipe (with regular hole punctures, and buried just beneath the surface of your top soil and mulch.)

**Rainwater Harvesting & Storage**

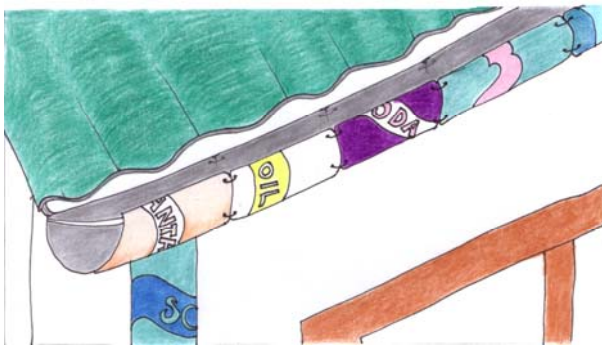
Rainwater and run-off from paved areas and roads are best diverted into pits in your garden, so that it can soak into the ground.

Rainwater collected from the roof is great for irrigation. As the least polluted, it can be easily treated for drinking, irrigating and washing.



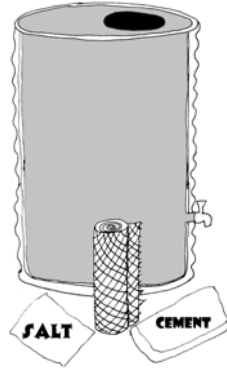
When collected, you will need to store your water in ZONE 1, for use in the home & garden.

Recycled gutters can be made from various materials (ea. bamboo, tins, or plastic containers.)



**WARNING:** Check that no paint is peeling off your roof which will contaminate your water. If your roof is made of asbestos or thatch then you should NOT use this water for drinking.

Plastic tanks (Jojos) can be purchased for R1000-2000. This is a great investment, as they will not deteriorate like galvanised metal tanks, which will soon rust and leak.



An old galvanised tank can be fixed by covering the inside with chicken wire. It can then be plastered with a mix of sand, cement and salt (to make it non-porous), and then left to dry.

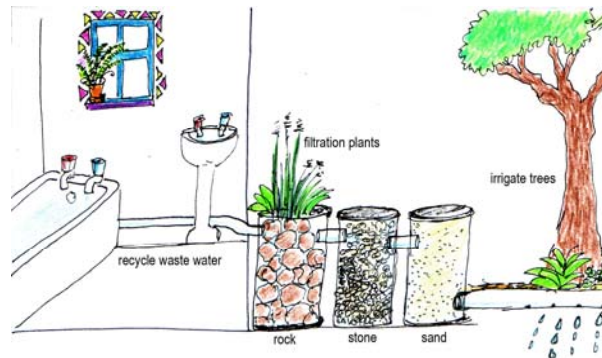
You can find and re-use old oil drums or other large containers, which can be set up side-by-side and linked close to the top with a simple pipe overflow to transfer water from one to another during heavy rains.

**GREY WATER RECYCLING**

Grey water is waste water. Filter the grey water through simple tanks or drums, filled with rocks, stones, sand & plants, before filtering through your garden.

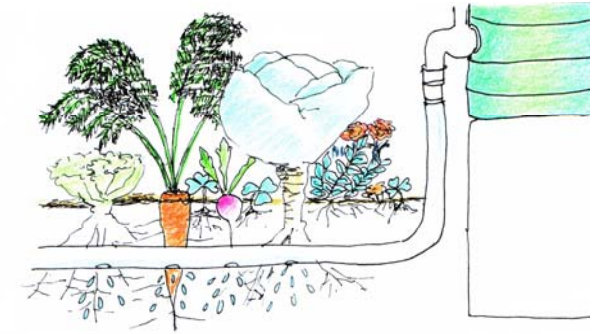
Direct your grey water towards fruit trees, or other plants chosen for their purification qualities. These deal with pollutants better than other garden plants.

Be careful about the soap you use. It can make the soil saline (salty). Use environmentally friendly soaps. Organisms in the soil can cope with most contaminants in grey water, but will suffer if water contains pharmaceuticals, bleach or other heavy chemicals – which should NEVER be washed down your drain.

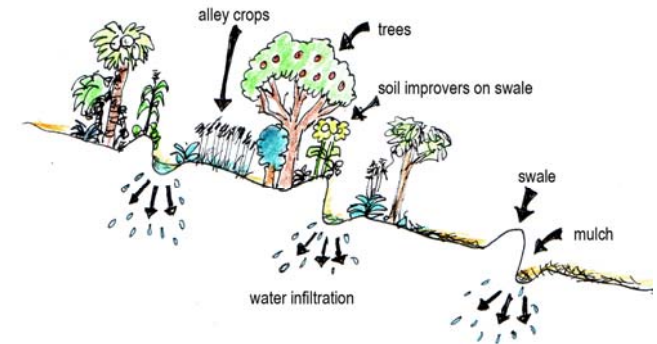


Avoid planting vegetables in grey water areas, especially root vegetables, like carrot or potatoes. Instead, use wetland plants which produce nitrogen, such as comfrey and watercress. These are excellent natural filters, and when harvested also make great green mulch, mulch or liquid manure.

If grey water comes from a hand basin, then this can be diverted straight into your vegetable beds.



If your garden is situated on a slope, you should dig deep swales. These are trenches act as sumps which follow the contours of your garden. During heavy rains, these mulched swales will capture and sink rain water, preventing it from washing valuable topsoil into the water ways.



**Remember:** The water cycle. Watch how water behaves, and copy this cycle in your garden by creating ground cover, swales and pits.

**PSSS ...PROTECT SAVE SINK & STORE**  
**Waste nothing!**