ECOFOSSA

(Evapotranspiration basin or Septic Tank)

A solution

ECONOMICALLY FESEABLE

ECOLOGICALLY CORRECT

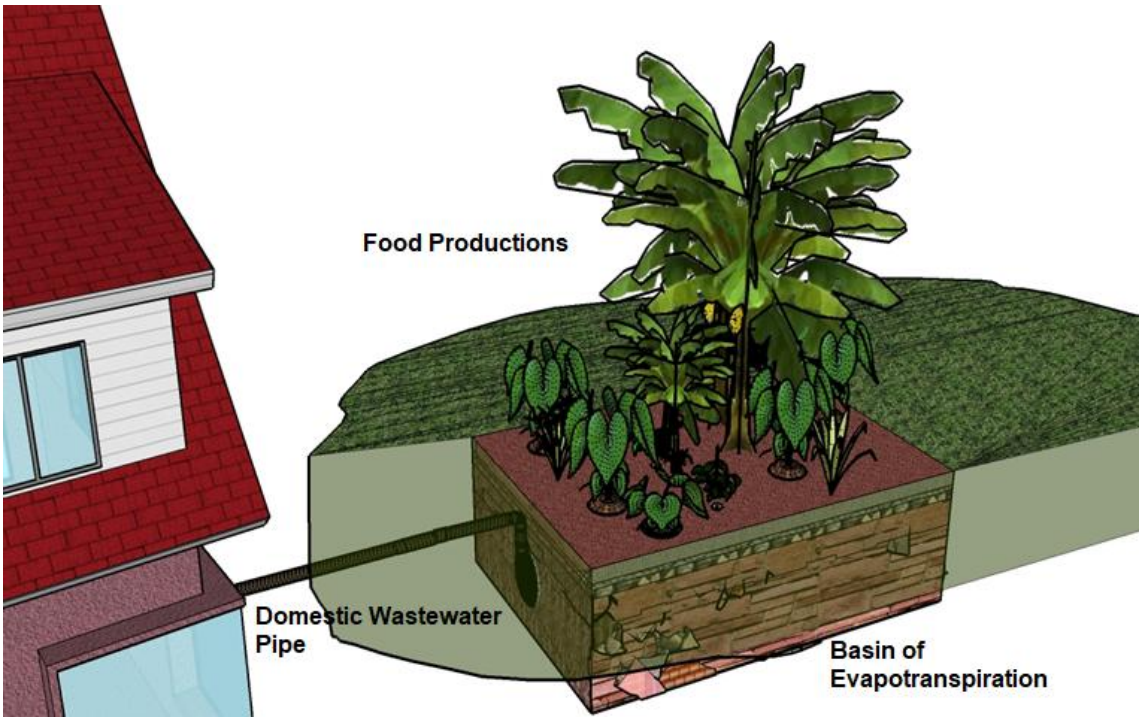
SOCIALLY FAIR

CULTURALLY ADEQUATE

TECHNOLOGICALLY APPROPRIATE

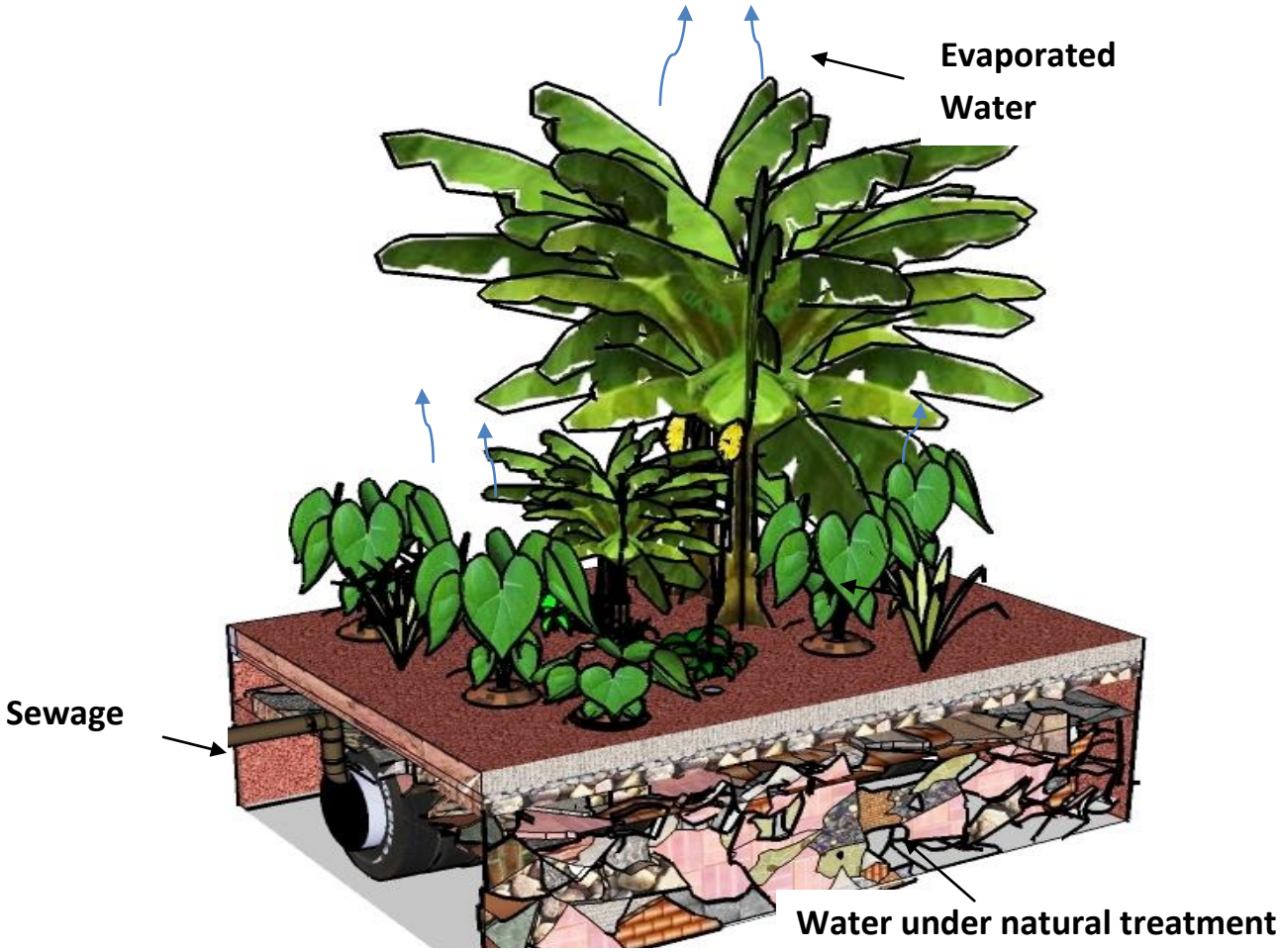
CIENTIFICALLY PROVED

for treatment of human waste



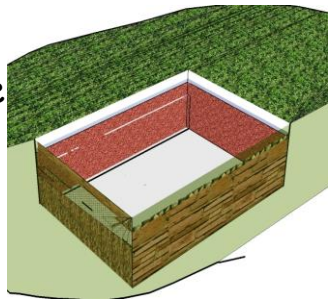
The **Ecofossa** is a Sustainable Socio-environmental Technology of Agroecology, also known as **Evapotranspiration Basin** or **Septic Tank**, and it is a natural system for treating water from conventional toilet discharges. This system prevents soil, surface water and groundwater pollution and does not generate any effluent at all. In the **Ecofossa,** human waste is naturally transformed into nutrients for plants, which remove water from the system through the process of evapotranspiration, returning it completely clean to the environment.

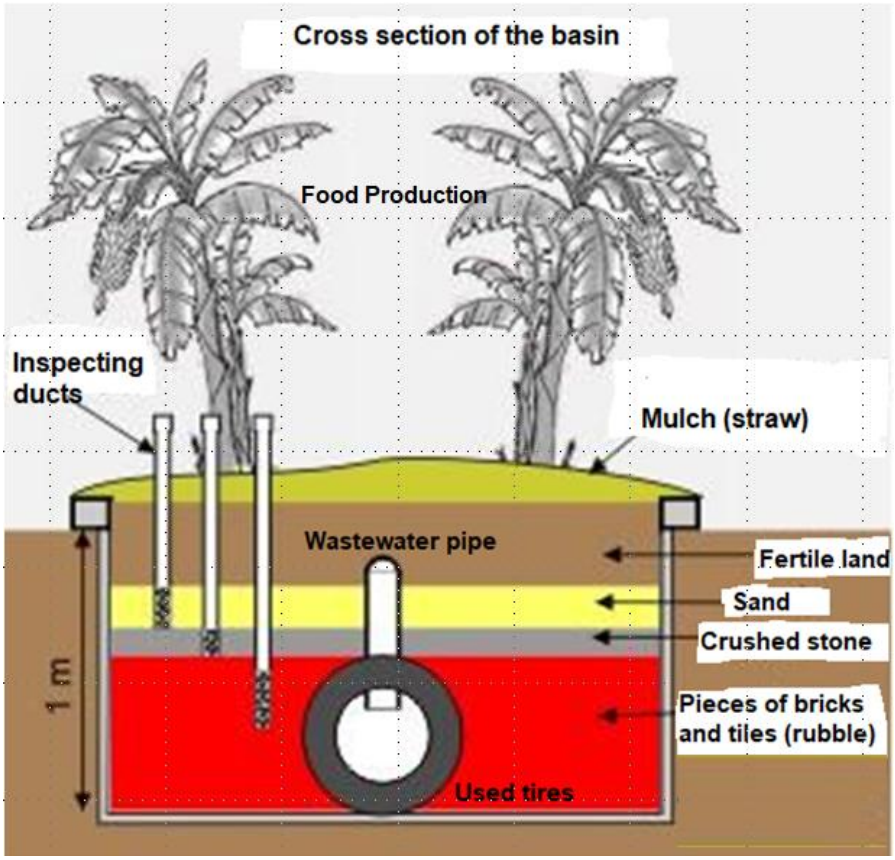
How it works and requirements for use of the *Ecofossa*

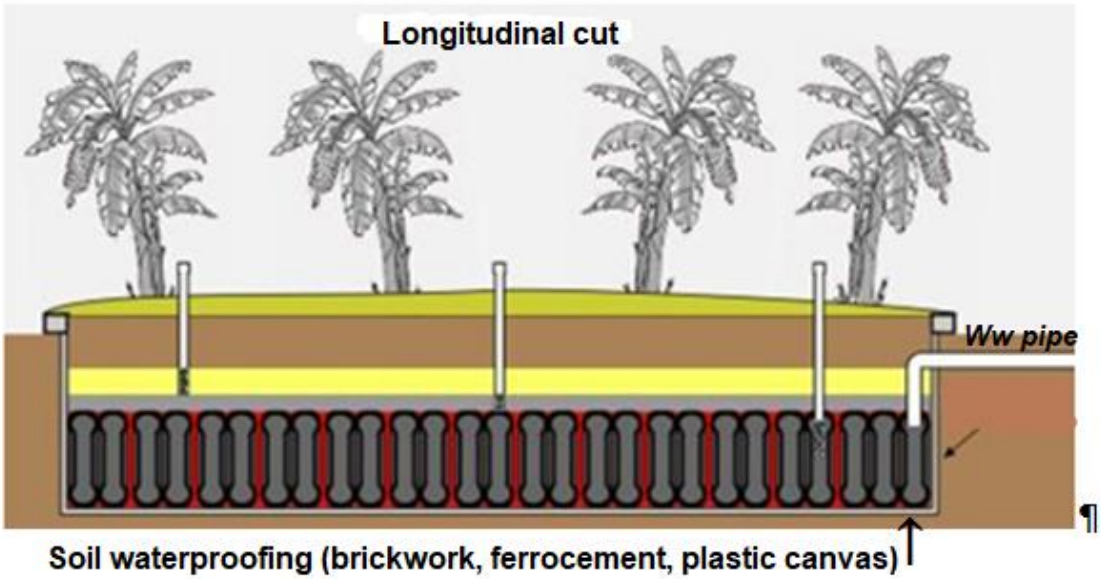


First, the separation of the house-used water into gray and wastewater is necessary. Only the sewage, that one which leaves the toilets, must go to the *Ecofossa*. The grey water that one which goes out from the washing machine, sinks and showers, must go to the other treatment system, like a circle of banana trees or a biological filter with gravels, also easily built and without the need of soil sealing.

The *Ecofossa* is a rectangular hole dug and sealed, dimensioned in one meter in depth and two square meters per person of the family.





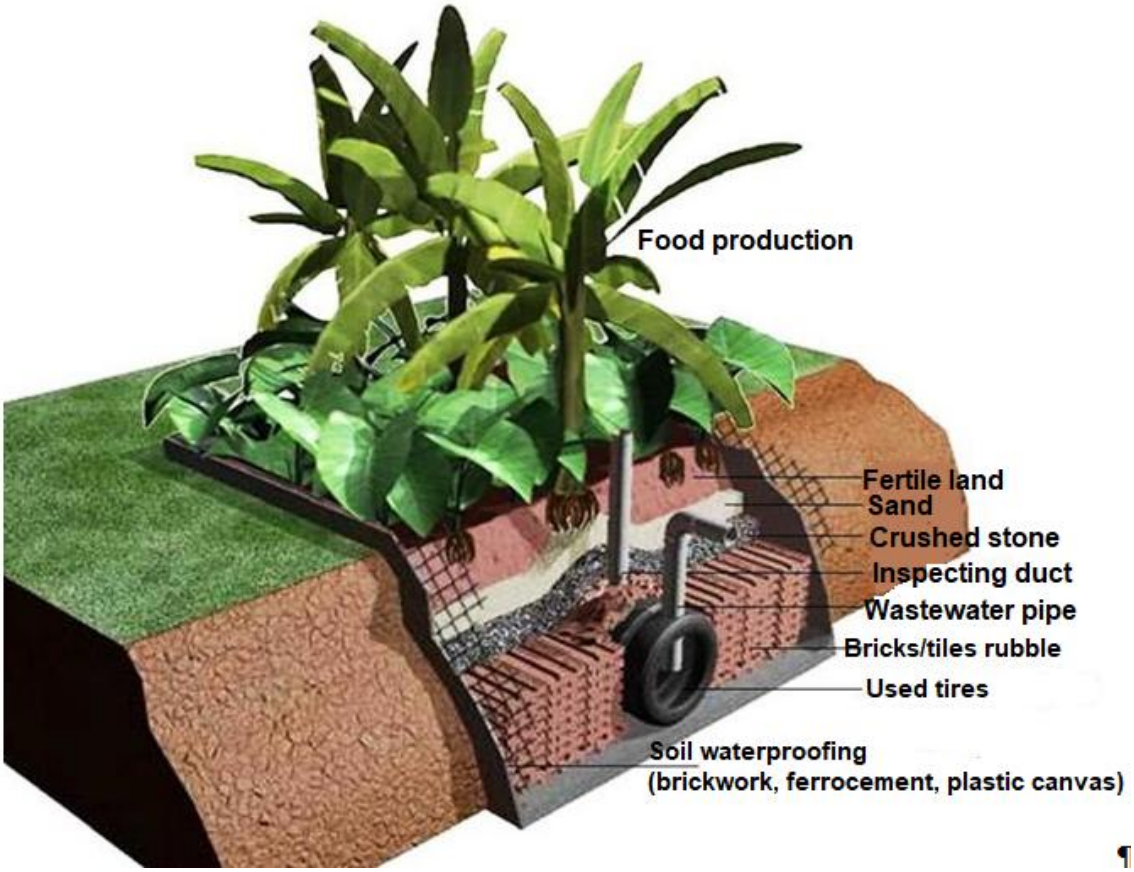


This space is filled with different layers of materials, and planted with fast-growing plant species that like a lot of water, such as banana trees, taioba and yam, for example, and even garden flowers.

Materials and tools for building

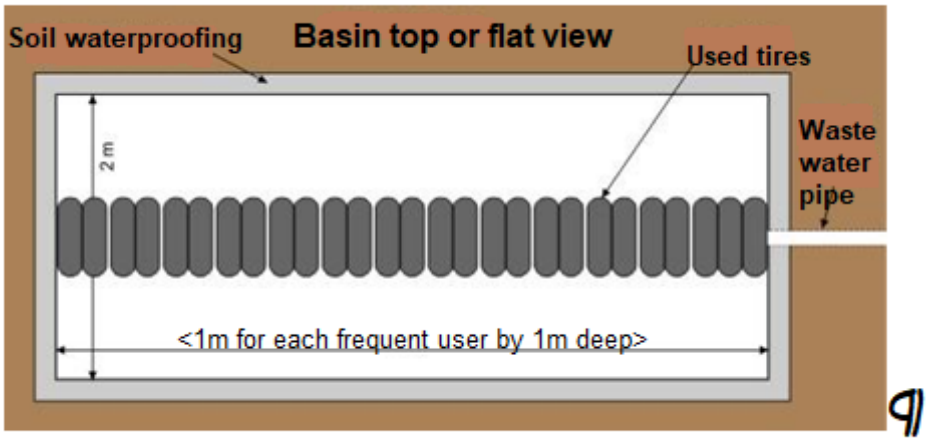
Materials: Broken porous material, like bricks, roof tiles or building debris; Crushed Stone; [1]Fine and medium sands; Old car tires, cement and/plastic screen, Land.

Tools: Shovel; Hoe; Digger; Pushcart; Pickaxe, Measuring tape; Trowel.



[1] ine

1 – Trench: Dig always 1 meter deep per 2 m^2 per person and seal the soil;

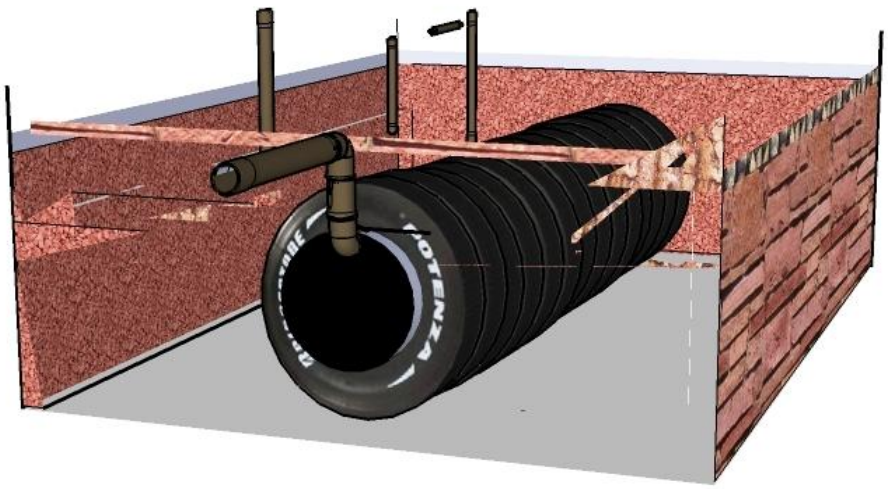


It is known that 2 cubic meters of basin for each resident are enough for the system to work without an overflow.

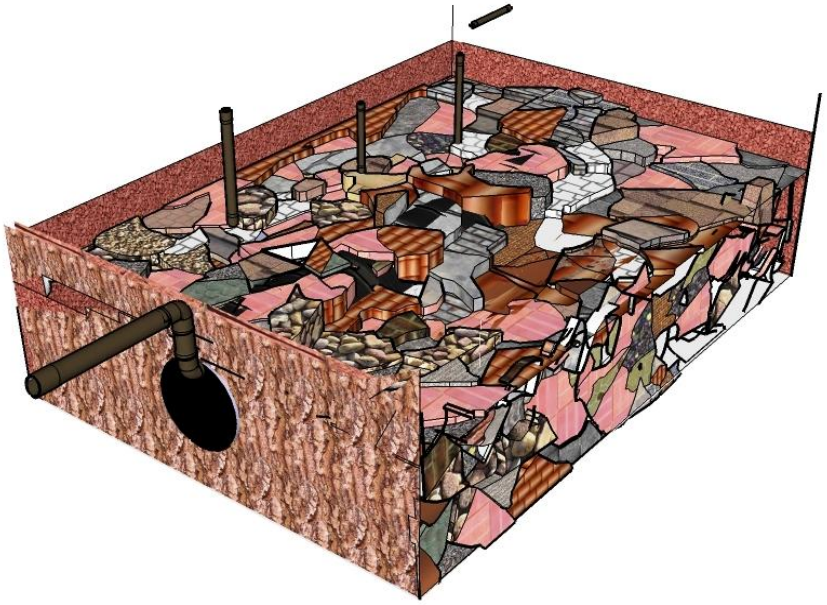
The recommendation for sizing the basin is: width of 2m and depth of 1m. The length is equal to the number of usual residents in the house. For a house with five residents, the dimension looks like this:

(LxPxC)=2x1x5 = 10 m^3.

2 – Reception chamber (Series of **used tires**, aligned horizontally): Organize the column of used tires, placing some pieces of broken brick or tile between them, to allow greater circulation of the (used water) effluent.

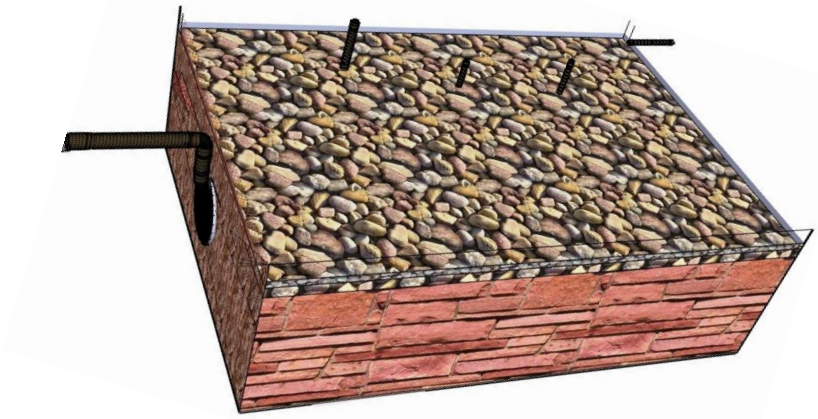


3- Layer of building debris (rubble): Where the natural anaerobic digestion of the effluent takes place, which pours off through the small spaces between the tires;



4- Layer of coarse gravel and fine gravel: In these layers, a natural filtering of wastewater begins, which allows the healthy development of plant roots.

Layer of coarse gravel or of pebble



Layer of fine gravel

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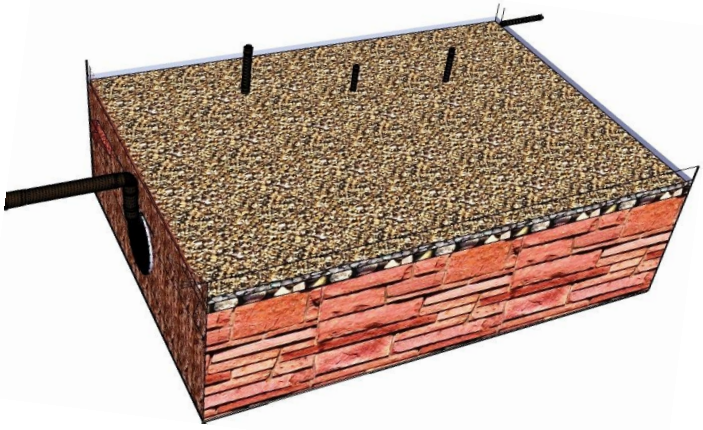
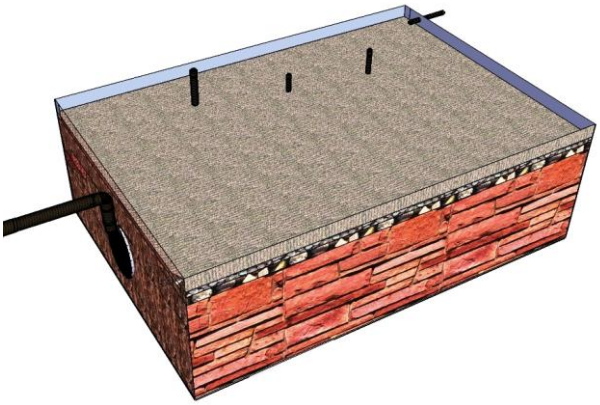
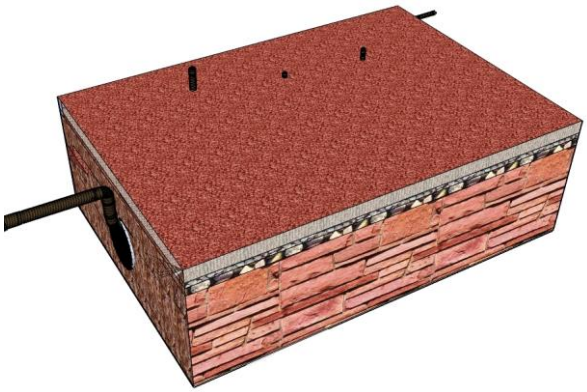


5- Layer of Sand: Where the natural filtering of the used water continues and is refined.



6- Layer of land: Care must be taken to fertilize it with Composting, for better development of the plants placed on the surface of the basin.



7- Plants: After the anaerobic decomposition of organic matter and its mineralization, there is the absorption of nutrients and water by plant roots. Nutrients leave the system, becoming incorporated into the biomass of these plants.

A small protective wall can be made around the surroundings, filling raffia bags with earth, which after being placed around the **Ecofossa**, must be tamped down.

Operating dynamics: With the increase of the volume of sewage in the tank, the water also fills the layers of gravel and sand, until it reaches the soil layer above, through which it moves by capillary rise to the surface. Thus, the evapotranspiration tank allows the water that would be eliminated from the system to remain there, performing other functions.

Fundaments:

"Scientific Validation and Extension Bias for the Ecofossa"

(Evapotranspiration basin)

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