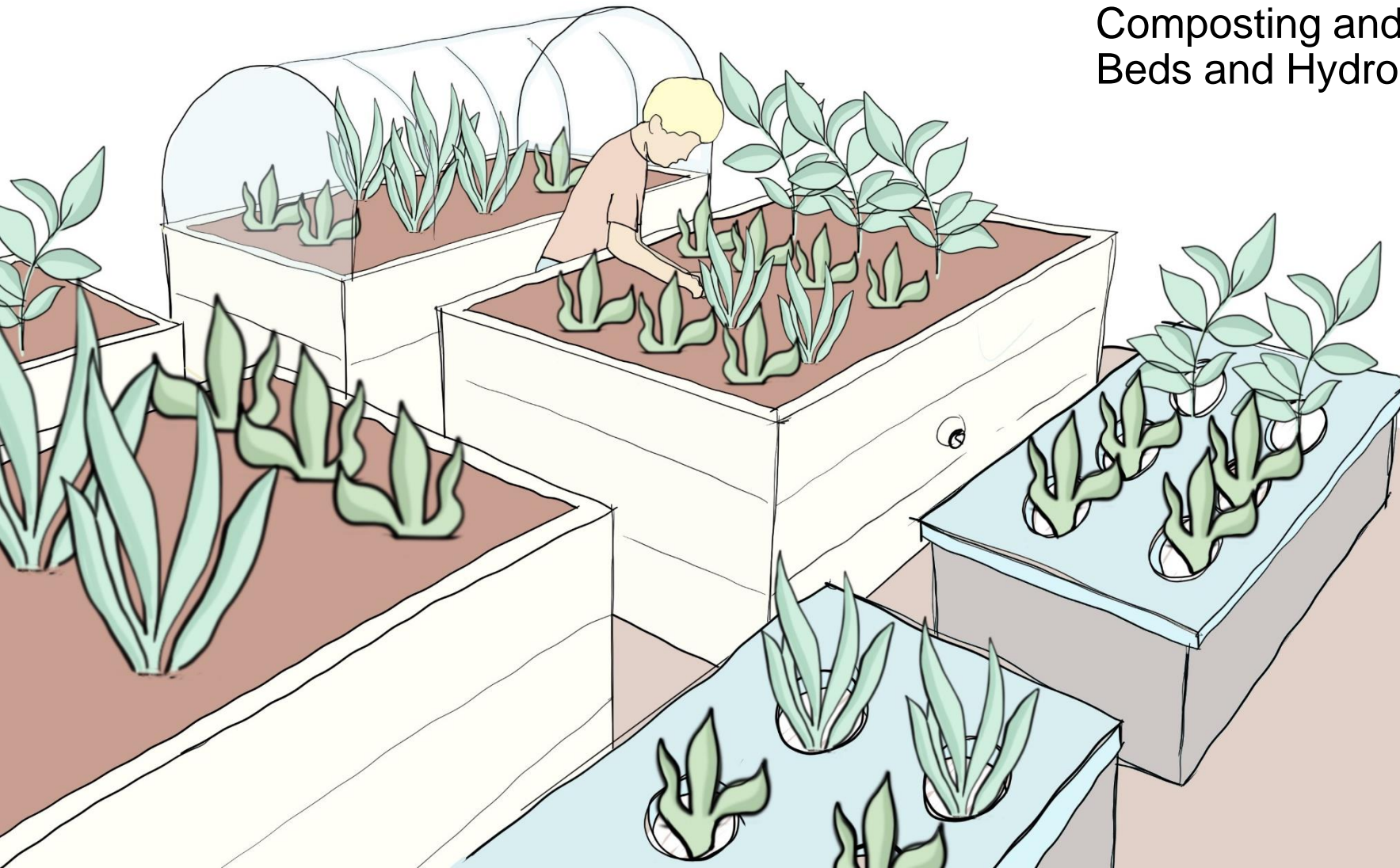


Urban Agriculture Manual

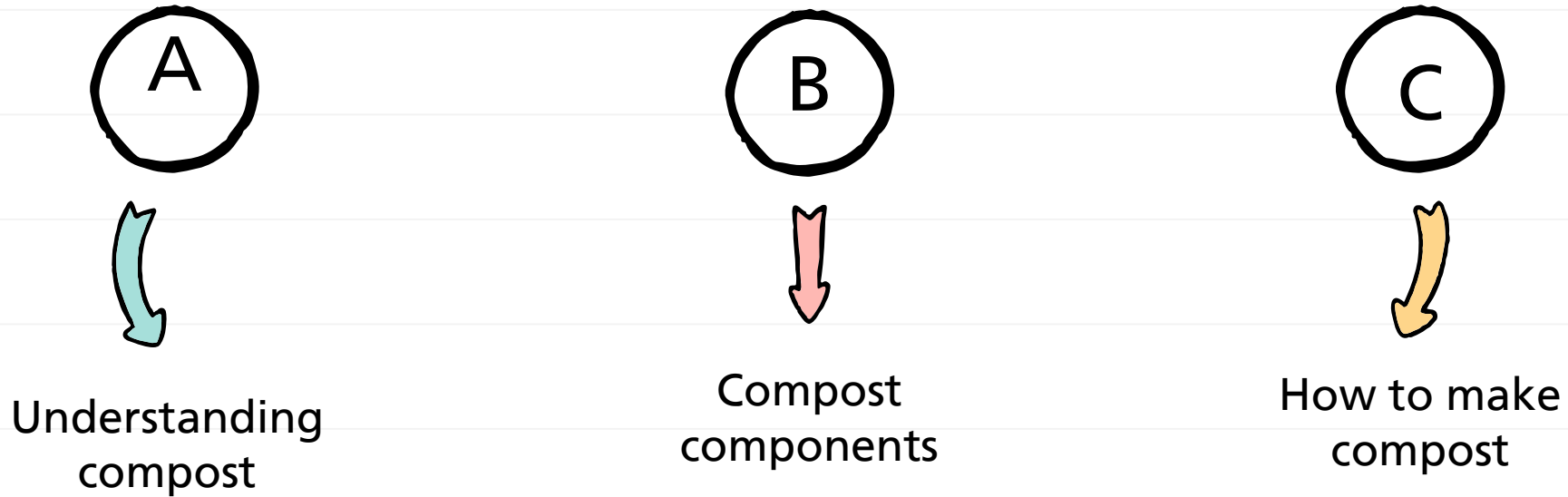
Addendum:

Composting and Planting through Wicking
Beds and Hydroponics



Unit one (one week)

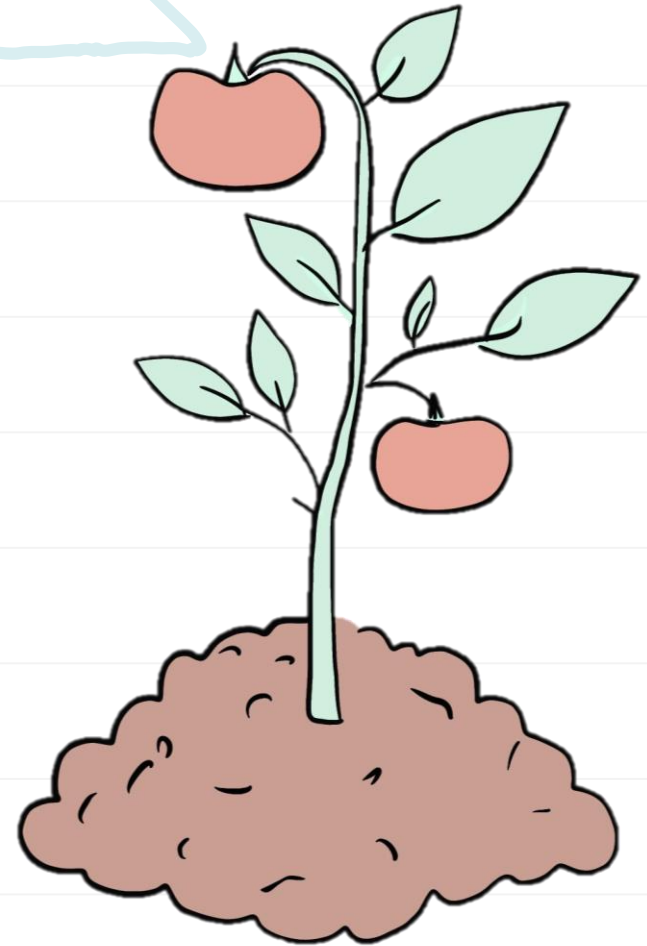
This unit aims to introduce students to composting and how to prepare it.
The unit will cover the following:



A. Understanding compost

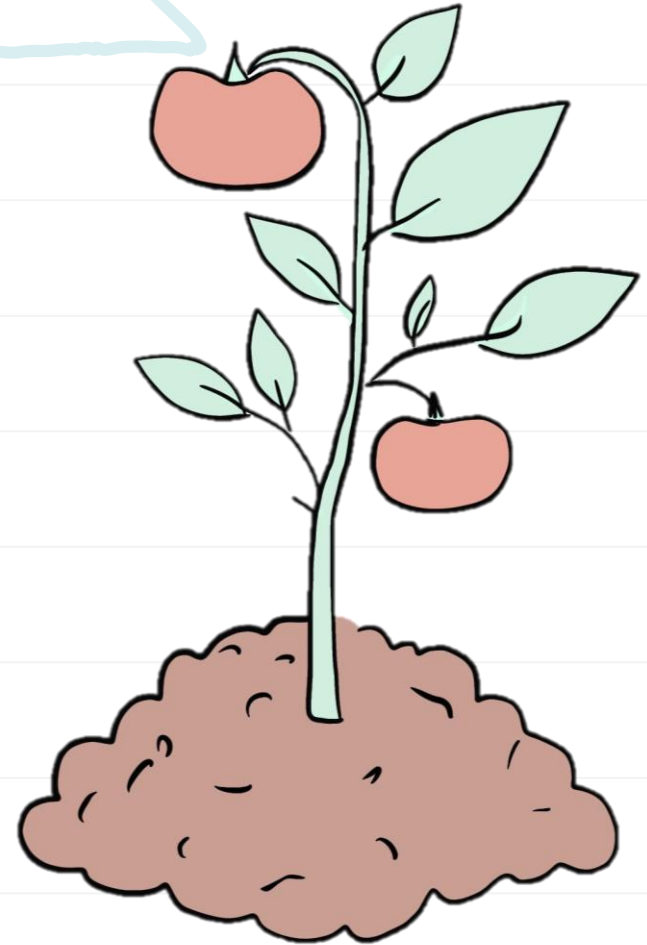
What is compost

Compost is an organic fertilizer that resembles natural soil in form. It consists of agricultural waste. It is rich in various beneficial substances that the soil must contain to feed plants.



The benefits of compost

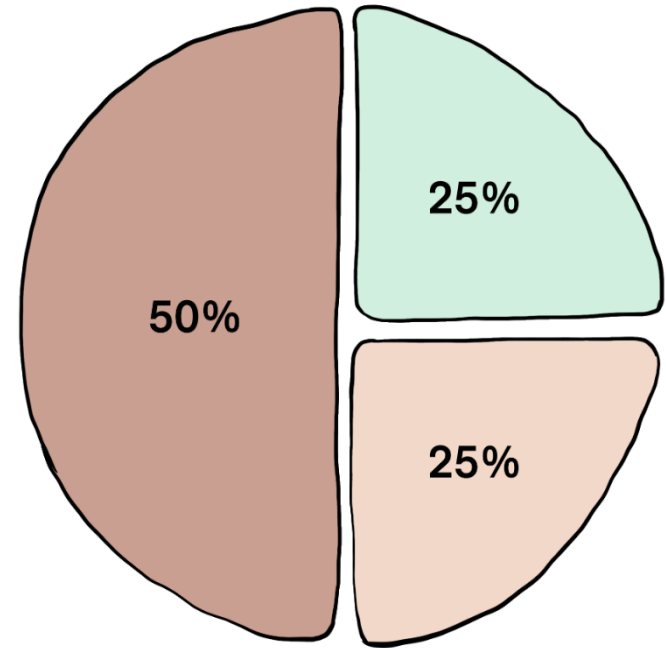
- Improves soil structure.
- Maintains healthy moisture levels in soil.
- Balances soil PH level.
- Saves money, as it replaces the need to buy chemical fertilizers.
- Reduces human generated waste.





B. Compost
components

- Dry materials, browns (Carbon): 50%
- Green materials (Nitrogen): 25%
- Animal based fertilizers: 25%



Fertilizers Greens Browns

Examples of browns

- Leaves
- Twigs
- Paper and carton
- Dry leaves
- Nut peel
- Sawdust



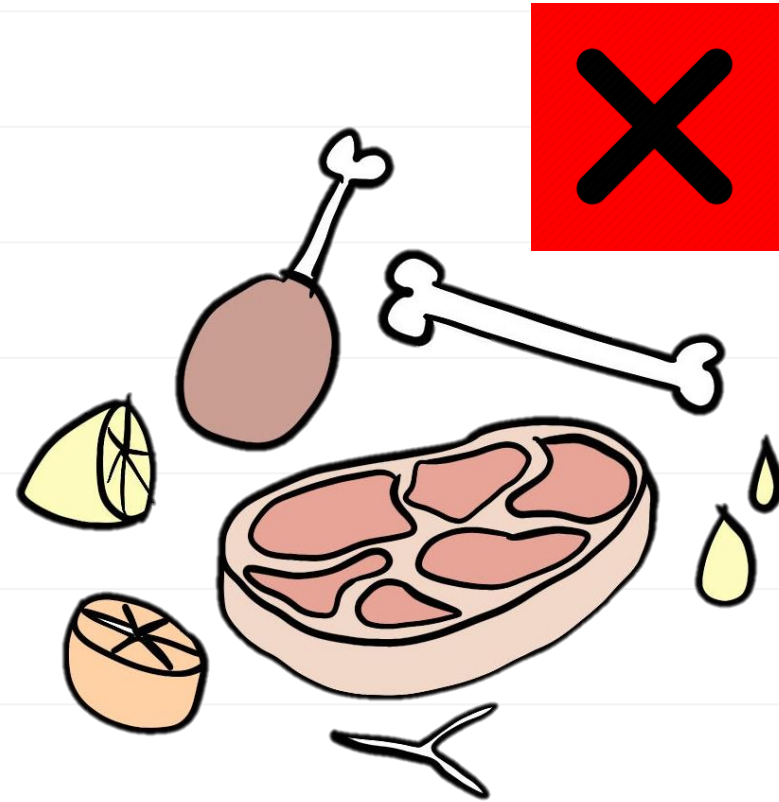
Examples of greens

- Uncooked vegetable and fruit scraps
- Tea and coffee
- Old and dry bread
- Grass
- Dust, collected from vacuum cleaners for example.



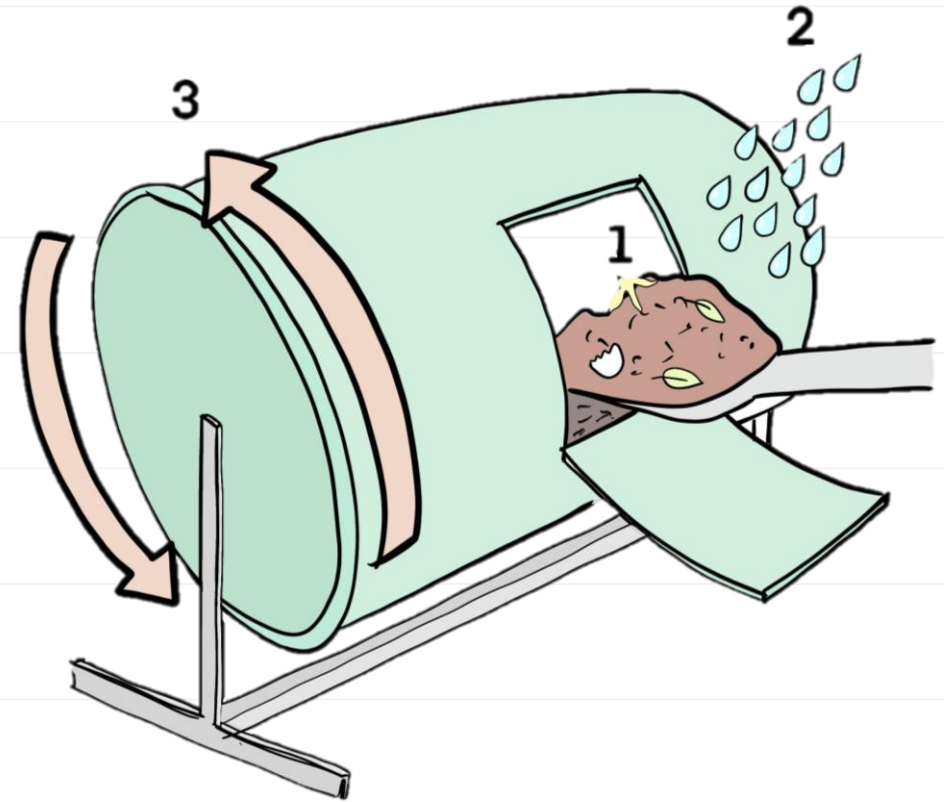
Substances that should not be added

- Meat, bones, and animal skin
- Fats and oils
- Cooked food
- Dairy products
- Citrus fruits



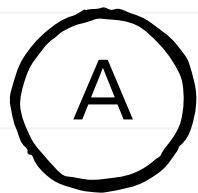
C. How to make
compost

1. Assemble the compost components until they reach a volume of one cubic meter. (50% browns, 25% Greens, and 25% Animal base fertilizers)
2. Add water to the mixture. When you hold the mixture in your hand, make sure it is wet, but does not drip water.
3. The mixture should be stirred weekly over a period of two to three months, until it turns into an earthy substance that is rich in beneficial materials needed to feed the plants.

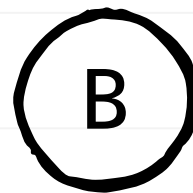


Unit two (two weeks)

This unit aims at familiarizing students with different planting methods.
The unit will cover the following:



Wicking beds

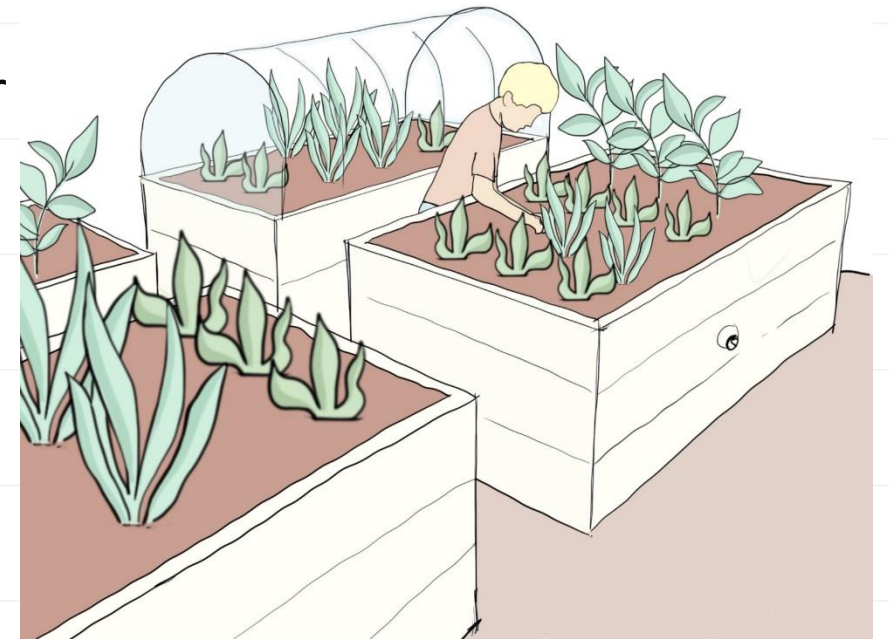


Hydroponics

A. Wicking beds

What is a Wicking bed

- Wicking beds are a type of planting beds in which plants are watered from below rather than from above.
- They are basically containers with water reservoirs at their base. Moisture is drawn up through the soil via a process called 'capillary action' or 'wicking'.
- This allows moisture to be more evenly distributed through the soil, thus creating better growing conditions for the plants.



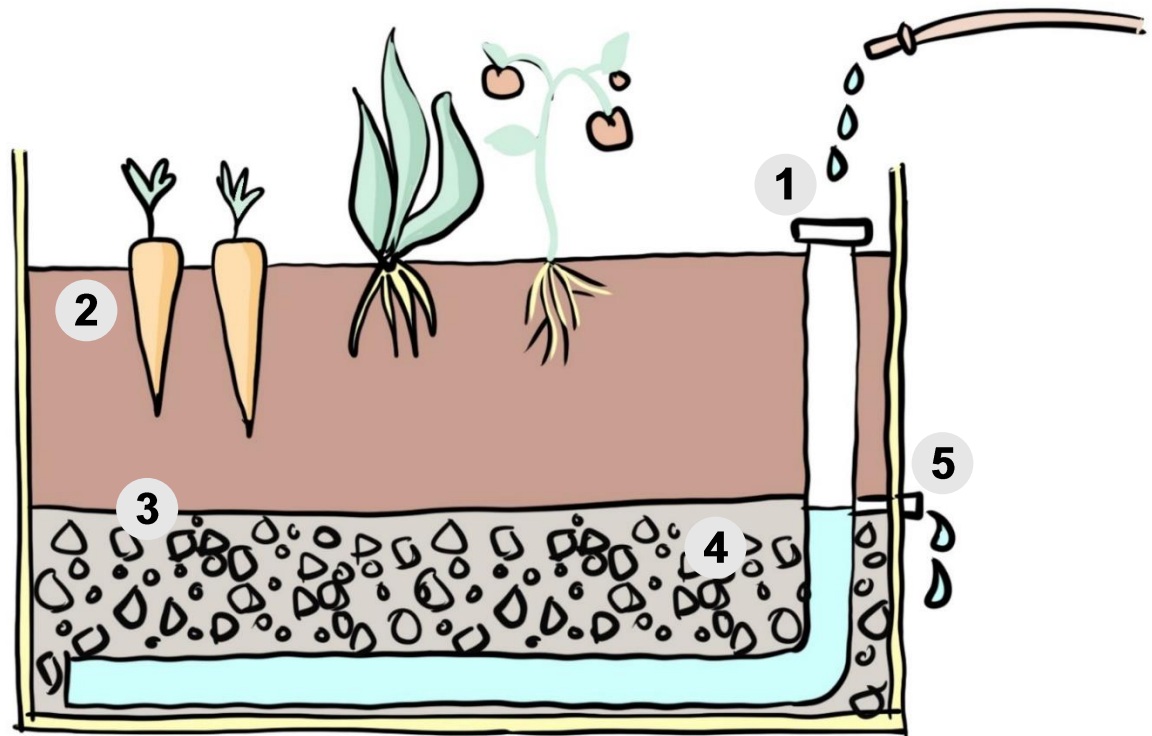


The benefits of Wicking bed

- Water efficient
- Self watering
- Provide better drainage of water
- Harder for weeds to establish

Wicking bed components

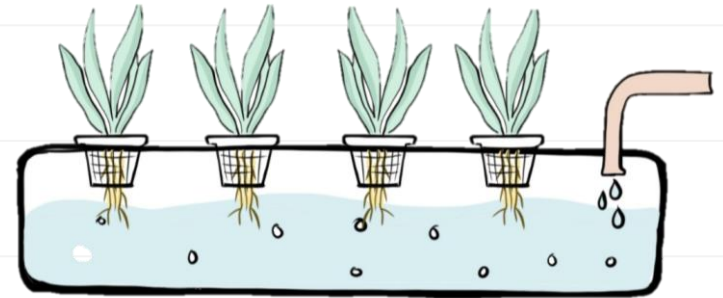
- 1 Down pipe
- 2 Growing medium
- 3 Geotextile
- 4 Coarse aggregate
- 5 Overflow drain



B. Hydroponics

What is Hydroponics?

Hydroponics is the process of planting in water instead of soil with the addition of the needed nutrients to the water. It allowing planting to take place just about anywhere.



The benefits of Hydroponics



Plants can be grown anywhere



Water saving



No Pesticides



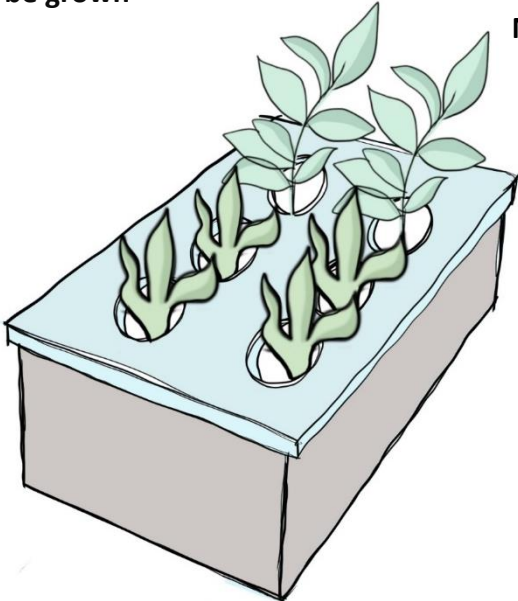
Affordable



Fast growth

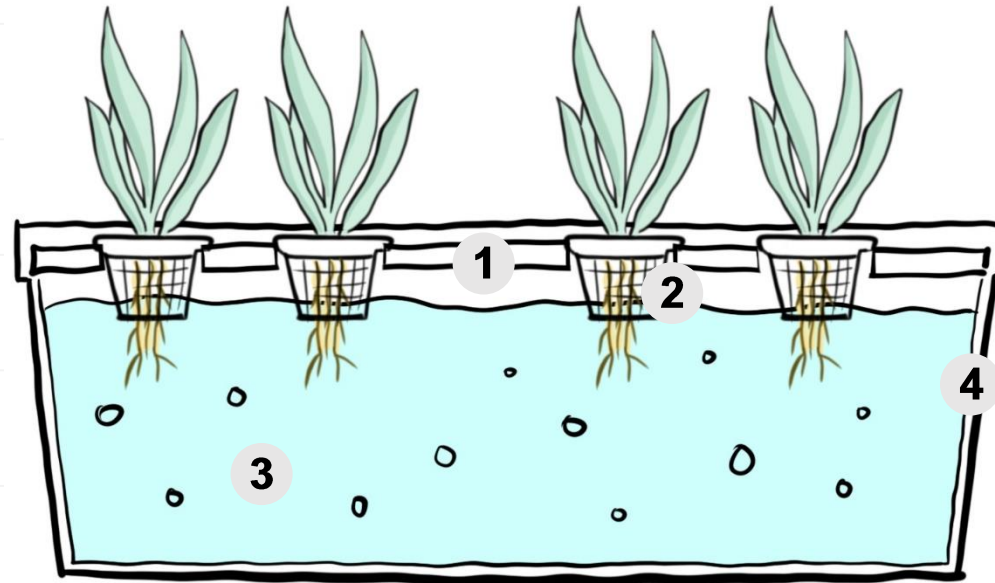


No weeds

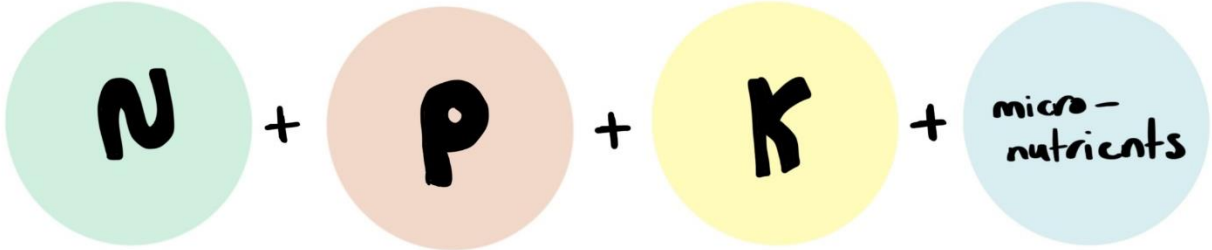


The components of a Hydroponic kit

- 1 Floating medium
- 2 Planting medium
- 3 Water + nutrients
- 4 Container



Nutrients

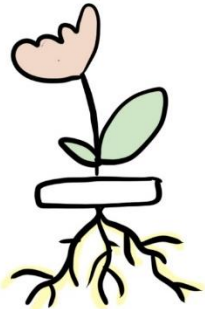


Nitrogen



Provides for healthy foliage

Phosphorus



Allows for the development of flowers and strong roots

Potassium



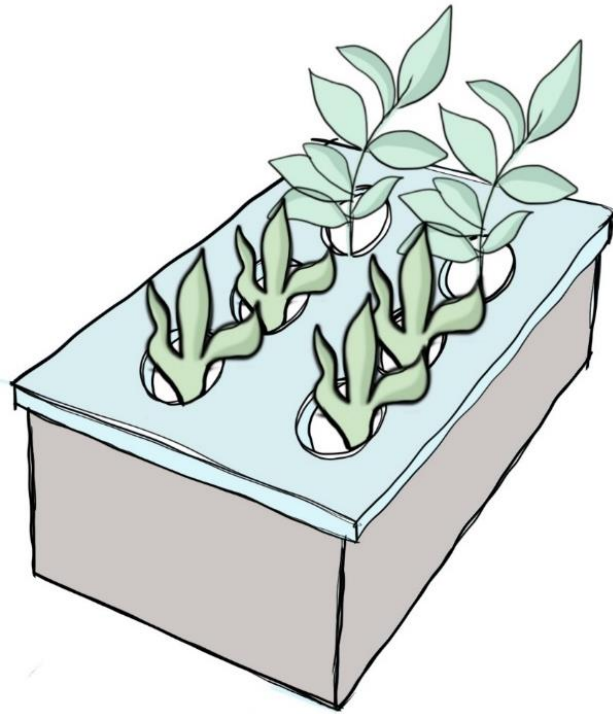
Allows for hearty growth

micro-nutrients



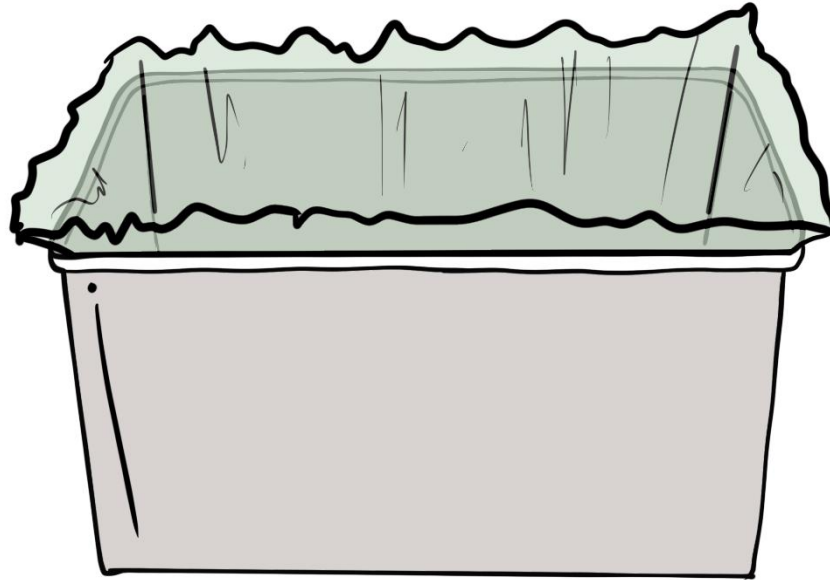
Allows for strong and steady growth of crops

How to make a hydroponic kit



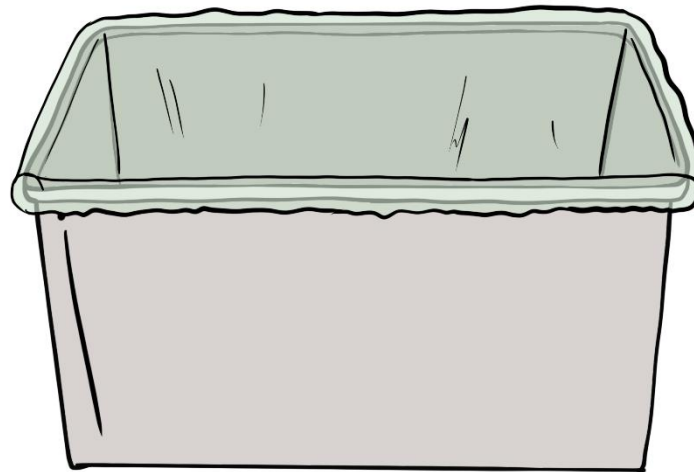
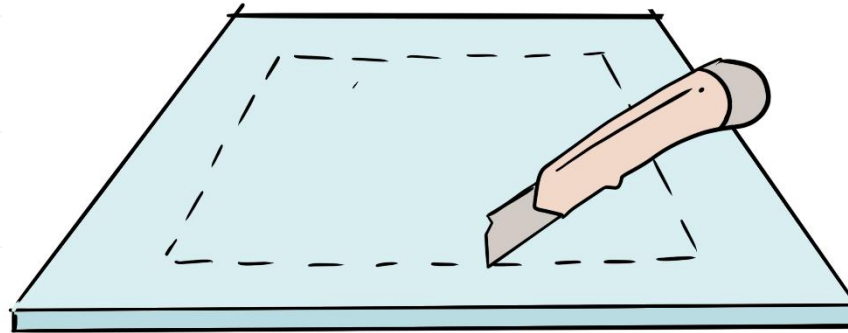
1

Find a container and make sure it is waterproof, otherwise line it with plastic cover.



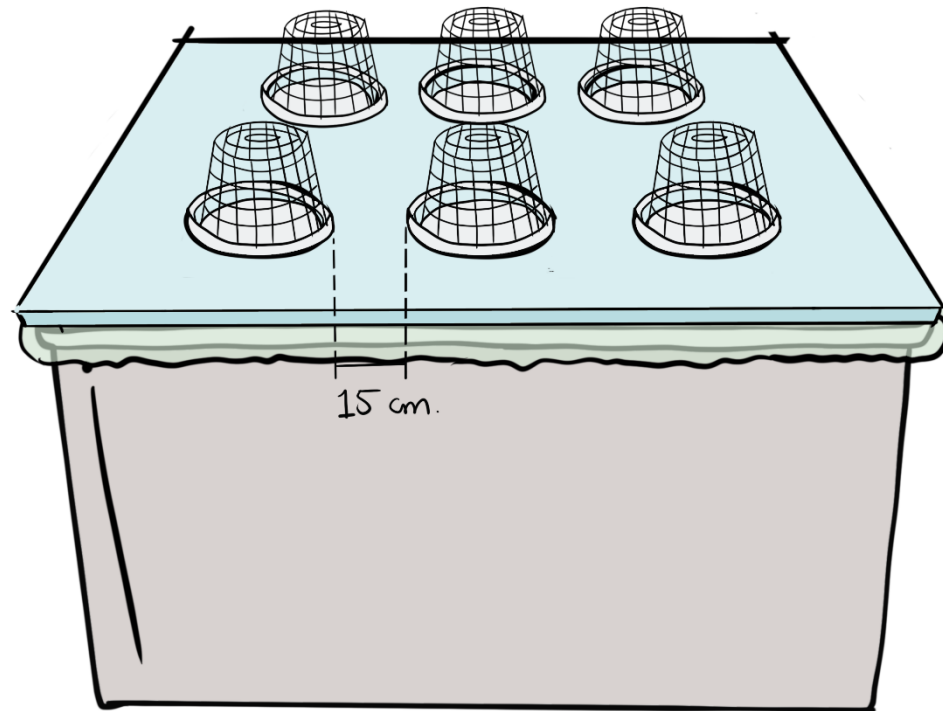
2

Get a styrofoam board and cut it as a lid for the container.



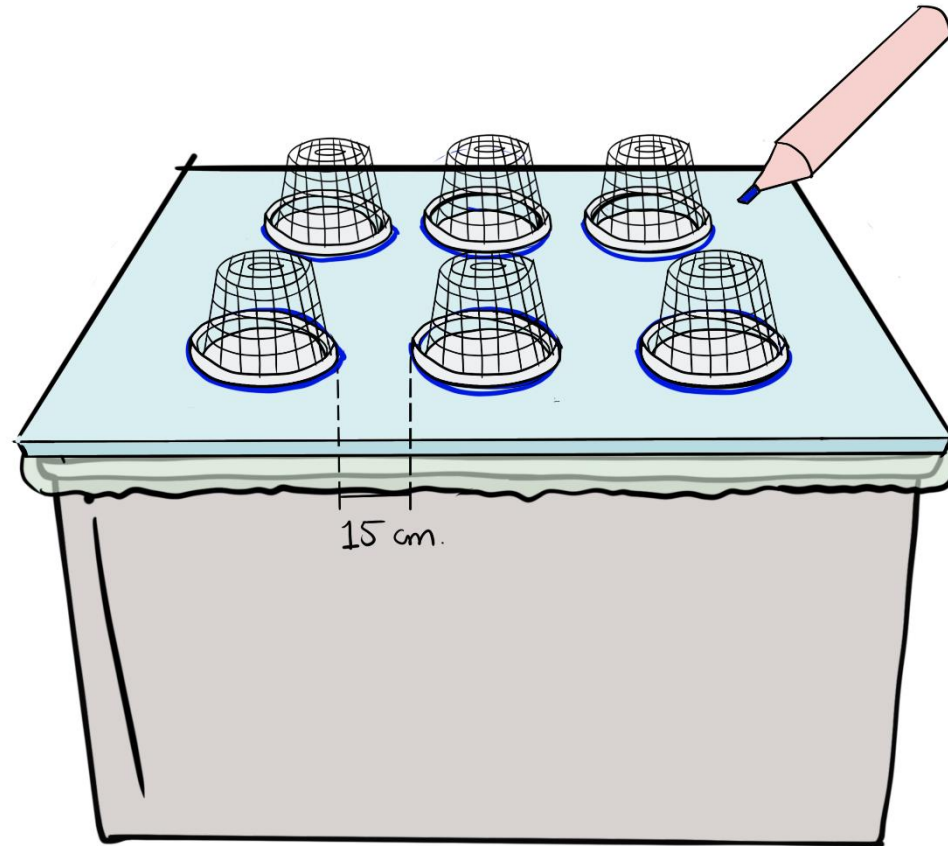
3

Get net pots and distribute them on top of the Styrofoam, leaving a 15 cm space between each pot and the adjacent one.



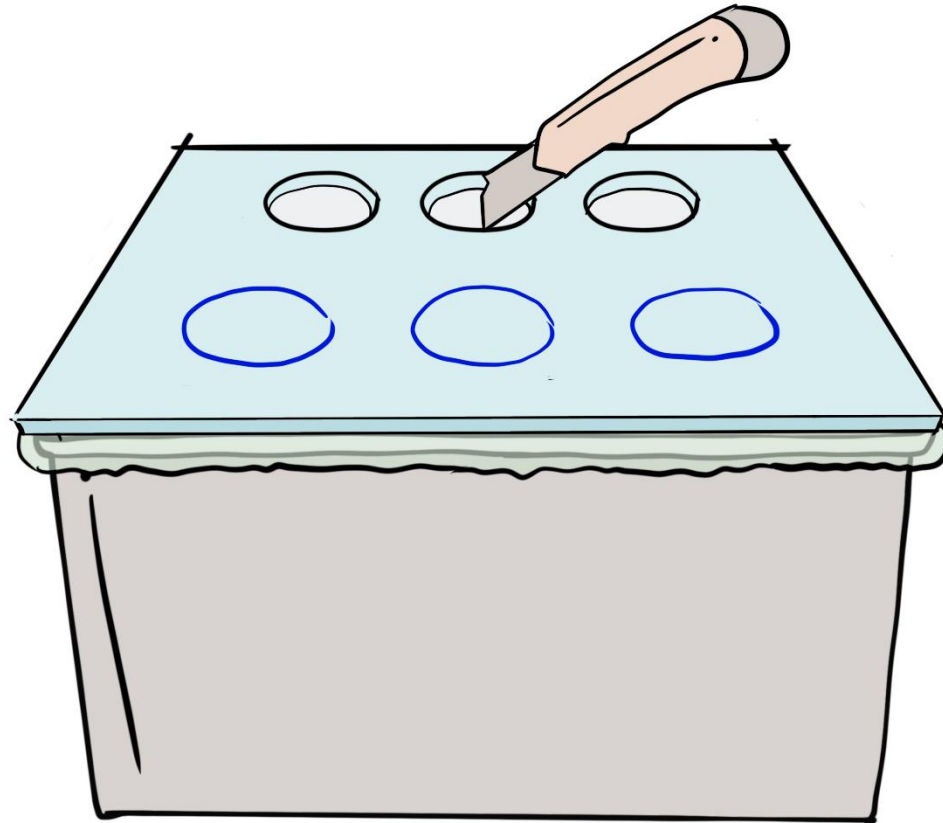
4

Mark the places of the pots on the lid.



5

Cut circular holes in the styrofoam according to the marks you did.



6

Place the seedlings in the pots and gently make sure you pass the roots through the holes at the bottom of the pots.



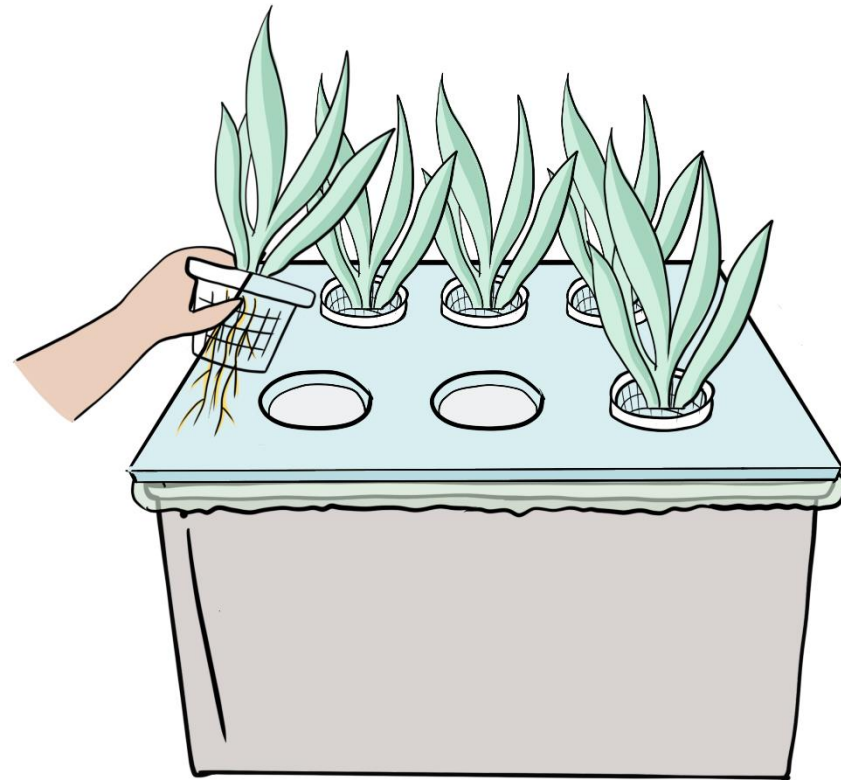
7

Place fine volcanic rocks around the seeds for support.



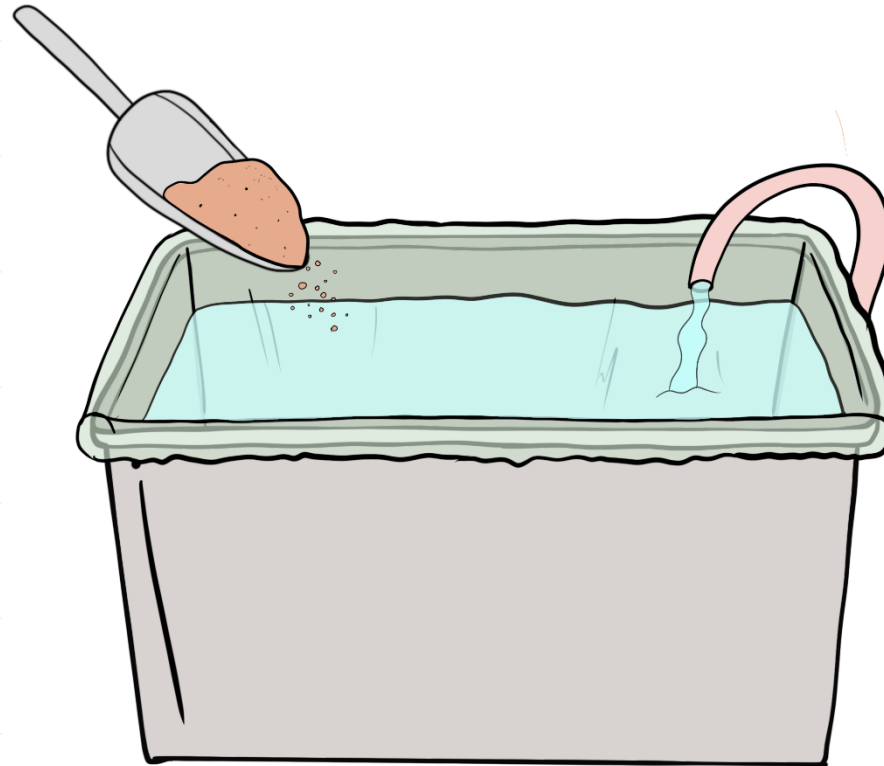
8

Place the pots in the holes of the lid.



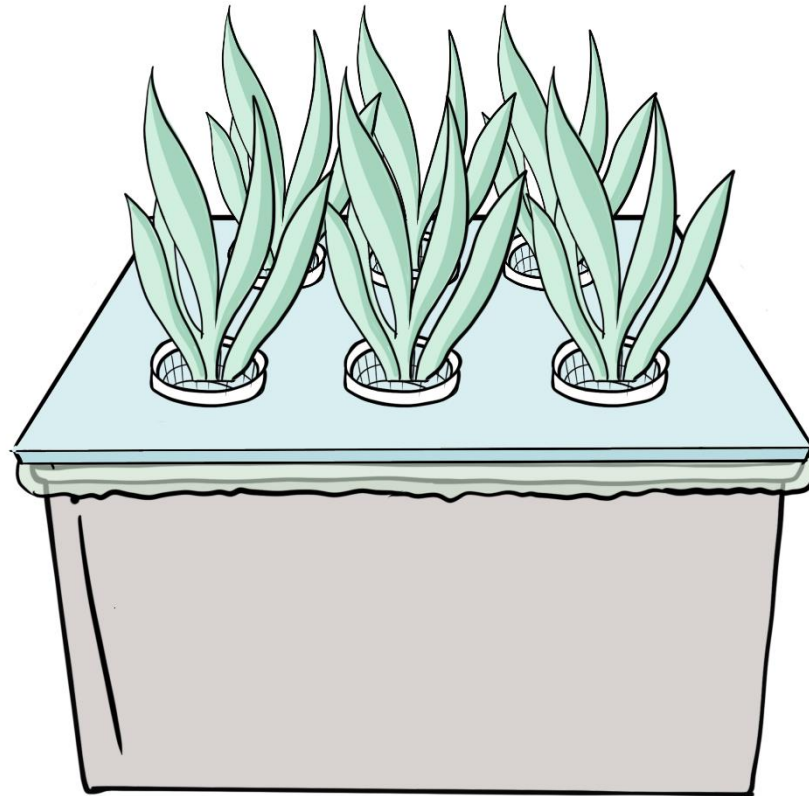
9

Fill the container with water and add the necessary nutrients.



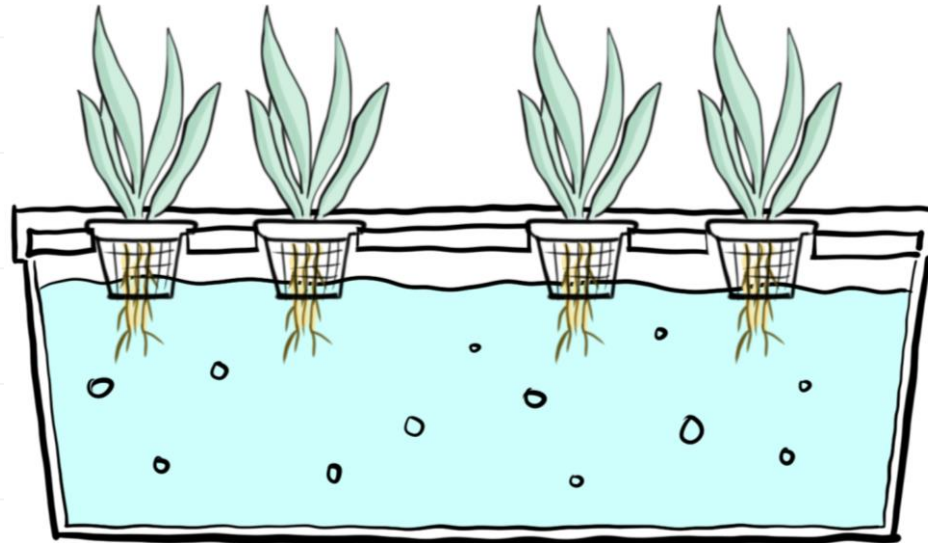
10

Place the styrofoam and the seedlings on top of the container.



11

Make sure that the tips of the roots reach the water.





Thank you