**Experiment 1 – plant nutrition**

This experiment is designed to investigate how nutrient concentration impacts plant growth. Just like people, plants need food to grow. Plant food comes in the form of nutrients, which in a hydroponic system, is supplied in the form of a liquid. We want you to investigate if plants grow bigger the more we feed them.

Hypothesis: Higher concentrations of nutrient solution will create larger plants.

Materials

* Cube
* Seeds – 180 x sunflower, 180 x lettuce, 180 x chives, 180 x lemonbalm, 180 x kohl rabi, 180 x beet
* 3 x Growfelt mats
* Water
* 2 litre jug
* Nutrient solution
* Pipette
* Mixing spoon
* Permanent marker pen
* Ruler
* Paper – cut into 36 pieces
* Hat, bowl or something similar

Method

1. Cut the paper into 36 pieces. Write sunflower on 6 squares, lettuce on 6 squares and so on… Put all the squares into a hat, bowl or similar
2. Divide each mat into 36 x 10 cm squares by marking with a permanent marker pen and ruler. Once you have done this, place the mat into the tray.



Randomising the design is important to remove any bias. For example, if all the sunflower seeds are sown along one edge, is this fair to the other seeds? No, because they might be exposed to more natural light, and therefore it might impact on the growth.

1. To randomise the design, draw the names from the hat/bowl and assign each one to a square, starting in the top left and going in rows until all squares are assigned a seed type. Use the marker pen to label each square.
2. Carefully open each seed packet and count 60 seeds.
3. Sow 10 seeds into each square, giving each seed some space, and making sure they stay within the square
4. Repeat this process for all 3 trays
5. Place the trays into the cube

Now the experiment begins…

* Control – 0.5 ml nutrient solution (EC 0.3)
* Treatment 1 – 1 ml nutrient solution (EC 0.5-0.6)
* Treatment 2 – 1.5 ml nutrient solution (EC 1.0)

1. To prepare the nutrient solution, add 2 litres of water to the measuring jug and using the pipette, add 0.5 ml of nutrient. Mix well using a spoon.
2. Gently pour the solution into the tray labelled “control”
3. Repeat this process, for treatment 1 and treatment 2 (as shown above)

Once all 3 trays are sown and irrigated with the nutrient solution, close the doors and watch out for the seeds germinating! Apply nutrient solution as required to the correct concentration, to the same recipe as before. (Is there a marker on the tray?)

1. Record the results in the app