**Experiment 1 – tickling (thigmomorphogenesis)**

This experiment is designed to investigate how touch stimulates plant growth. In the wild, plants are exposed to wind, water droplets and animals and insects passing by – all of these have impacts on how the plants grow. We need your help to tickle the plants in the cube!

Hypothesis: Tickling plants improves their growth

Materials

* Cube
* Seeds – 180 x sunflower, 180 x lettuce, 180 x chives, 180 x lemonbalm, 180 x kohl rabi, 180 x beet
* Paint brush
* 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

Did you know that plants can be grown without soil? In fact, if we provide the right nutrients, light and some form of root support, plants can grow in liquid! Cool, huh? The next part of the methodology is preparing the nutrient solution that will feed the plants. Please make sure you prepare the solution away from any electric devices.

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
3. Repeat this process for all 3 trays
4. Label each tray as control, treatment 1 and treatment 2.

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 same recipe as before. (Is there a marker on the tray?)

Once all the seedlings are 2 cm tall, they are ready for tickling. Make sure all patches have got to this height before starting the experiment. Some patches may be taller, but that’s OK.

* The control – no tickling
* Treatment 1 – gentle tickling – using the paintbrush to brush each plant 5 times
* Treatment 2 – moderate tickling – using the paintbrush to brush each plant 10 times

1. Carry out tickling 3 times per week – Monday, Wednesday and Friday
2. Record the results in the app

Example unit allocation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB\_C |  | C\_C | KR\_C | B\_C |
| LB\_C | L\_C | C\_C | KR\_C | S\_C |
| LB\_C | L\_C | C\_C | B\_C | S\_C |
| LB\_C | L\_C | KR\_C | B\_C | S\_C |
| L\_C | C\_C | KR\_C | B\_C | S\_C |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S\_G | B\_G |  | C\_G | L\_G |
| S\_G | B\_G | KR\_G | C\_G | LB\_G |
| S\_G | B\_G | KR\_G | L\_G | LB\_G |
| S\_G | KR\_G | C\_G | L\_G | LB\_G |
| B\_G | KR\_G | C\_G | L\_G | LB\_G |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| KR\_M | B\_M | S\_M |  | C\_M |
| KR\_M | B\_M | S\_M | L\_M | LB\_M |
| KR\_M | B\_M | L\_M | C\_M | LB\_M |
| KR\_M | S\_M | L\_M | C\_M | LB\_M |
| B\_M | S\_M | L\_M | C\_M | LB\_M |