

GCSE Biology required practical activity: Plant responses

Investigate the effect of light or gravity on the growth of newly germinated seedlings.

- set up three petri dishes with mustard seeds and allow them to germinate
- put each dish of seedlings in a different light intensity for the same period of time
- monitor the height of each seedling at each light intensity.

Apparatus

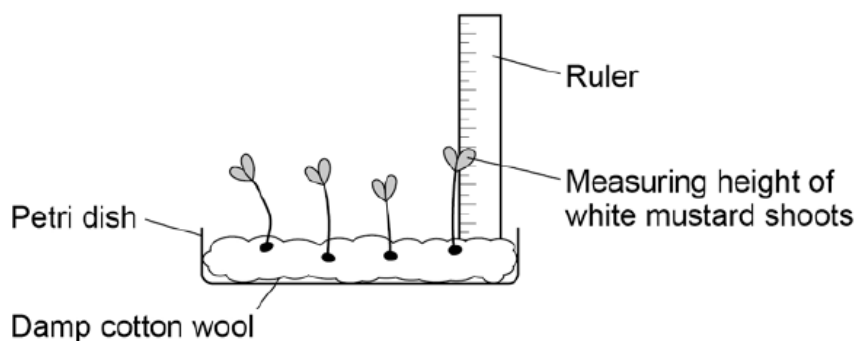
- some white mustard seeds
- three Petri dishes
- cotton wool
- a ruler
- water.

Method

1. Set up three petri dishes containing cotton wool soaked in equal amounts of water.
2. Put ten mustard seeds in each dish.
3. Put the dishes in a warm place. They must **not** be disturbed or moved.
4. Allow the mustard seeds to germinate.

Water daily with equal amounts of water to each dish.

5. Each dish should have the same number of seedlings after the seeds have germinated. Remove excess seedlings from any dish that has too many.
6. Measure the height of each seedling in mm.



7. Move the petri dishes into position.
 - Put one on a windowsill in full sunlight.
 - Put the second one in partial light.
 - Put the third one in darkness.
8. Measure the height of each seedling every day, for at least five consecutive days.
9. Record the heights in a table like this one:

Day	Height of seedling in full sunlight in mm								
	1	2	3	4	5	6	7	8	Mean
1									
2									
3									
4									
5									

You will need a table each for:

- full sunlight
- partial light
- darkness.

Analysis and conclusion

- a. Calculate the mean height of the seedlings each day.
- b. Plot a graph with:
 - 'Mean height in mm' on the y-axis.
 - 'Day' on the x-axis.

Your graph should include the data for full sunlight, partial light and darkness.

- c. Write a conclusion to state and explain your results, you should include reference to hormones and their distribution in your written answer.