



Activity 17. The effect of salinity on seed germination

Aim

To investigate the effect of salinity on crop germination

Background

This experiment is best run over a period of one to two weeks in order to give the seeds adequate time to germinate. Bean and sunflower seeds are suggested, however, seeds of barley, lucerne, wheat, oats, mung beans and millet are equally worth investigation. Students may compare results for different seeds, and continue this process by monitoring plants (Activity 36).

Materials required

- seeds of sunflowers and beans
- petri dishes
- filter paper
- distilled water
- five salt solutions at the following concentrations in plastic squash (squirt) bottles:
 - A. Distilled water
 - B. 0.25 grams salt per litre (g/L) distilled water
 - C. 1 g/L
 - D. 2 g/L
 - E. 2.5 g/L
- plastic film (food wrap)

Procedure

(see Figure 1)

1. Place filter paper in the bottom of each petri dish.
2. Label two dishes for each concentration

3. Spread bean seeds (not too thickly) across the filter paper on one dish A. Do the same with sunflower seeds in the other dish A. (Other seeds, as listed above can be used.)
4. Repeat step 3 for each of the remaining dishes B - E. There should be five bean dishes and five sunflower dishes.
5. Add distilled water to each dish A. Add sufficient only to moisten the seeds. Excess water is not necessary.
6. Repeat for each of the remaining dishes, using the salt solutions. For example, solution B on dishes B, solution C on dishes C, until water has been added to each dish.
7. Cover each dish with plastic film to prevent it drying out. Place the dishes on a bench in a safe place, not necessarily in sunlight.
8. Check the dishes every two days and add solution as necessary to keep the seeds moist. At each check, count the number of germinated seeds.
9. Continue checking and recording over a period of one to two weeks.

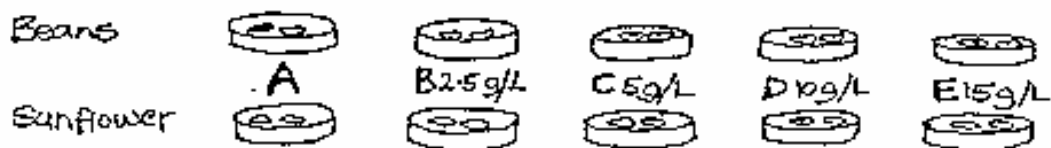


Figure 1

Studying the data

1. Record the results in a table (one table for each seed type), similar to the Table below.
2. Draw bar graphs of the results, showing the bars for beans in one colour and sunflowers in another.
3. What effect does salt appear to have on seed germination? Explain.
4. How did the two kinds of seed respond to the salt solution? Point out any differences between them.
5. What are the implications for farmers in salt-affected areas?

Seed type:			
Salt Concentration	Number of germinated seeds		
	1 st count	Final count (continue up to final count)	Class total
A			
B			
C			
D			
E			