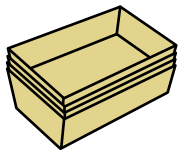


# The Science Educator at Work

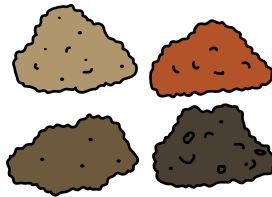
## ACTIVITY SHEET I: WHAT PROPERTIES OF SOIL HELP PLANTS GROW WELL?

**Aim:** To observe how different kinds of soil affect seed germination and plant growth.

### What you will need:



Four shallow trays  
or plastic containers



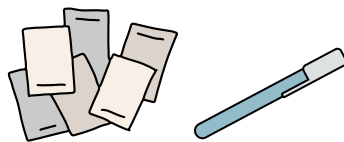
Different soil samples (like sandy  
soil, soil from a field, clayey soil, and  
soil mixed with manure)



One kind of seed (green  
gram grows within 24–48 h)  
for all trays



Water



Labels and marker



Notebook for observations

### What to do:

- 1) Soak the seeds in water overnight.
- 2) Make small holes at the bottom of the trays for drainage. You may ask your teacher for help.
- 3) Label the trays as:
  - Tray A: Sandy soil
  - Tray B: Soil from a field or garden
  - Tray C: Clayey soil
  - Tray D: Soil used in Tray B but mixed with manure
- 4) Place the trays on a flat surface and ensure the drainage holes are not blocked.
- 5) Fill about 3–4 cm of each tray with the soil on the label.
- 6) Sprinkle the same number of seeds in each tray. Make sure the seeds are evenly spaced out.
- 7) Cover the seeds lightly with a thin layer of the soil used in the tray. Try to make sure that the seeds in all 4 trays are at the same depth.
- 8) Gently sprinkle water on the soil in each tray until the soil is moist, not soggy.
- 9) Place all the trays in the same area. Choose an area that is well-lit with indirect sunlight.
- 10) Water the trays lightly every day. Use the same amount of water for each tray.



11) Observe the trays for one week.

**Observe and record:**

- Seed type:
- How long did you soak the seeds in water?
- How do the soaked seeds look?



S. No.	What to observe?	Tray A	Tray B	Tray C	Tray D
1.	How does the soil feel (loose, sticky, sandy, crumbly, etc.)?				
2.	How does the soil look (dark, light, etc.)?				
3.	How does the soil smell (dusty, earthy, slightly sweet, etc.)?				
4.	Does the soil look the same when dry and when wet? After you water the soil, does it become compact or stay loose? Does water soak into the soil quickly or does it stay on the surface?				
5.	Do you notice small insects, ants, or earthworms in the soil?				
6.	How many days does it take for the first seedling to appear?				
7.	How many seeds germinate in a week?				
8.	Gently remove one seedling from the tray. How do the roots look? Are they long and spread out, or short and weak?				
9.	Feel the soil near the roots of a few seedlings. Does it feel firm or loose?				
10.	How quickly do the seedlings change in height?				
11.	How many of the seedlings in the tray look green and healthy? How does this change?				
12.	How do the leaves look? How do they change in size and colour?				



**Think about and discuss:**

- Q1. All four trays have the same number of green gram seeds. They receive the same amount of light and water. In which tray:
- Do the seeds sprout first?
  - Do you see the most seedlings at the end of a week?
  - Do the seedlings show the fastest growth? What evidence supports this?
- Q2. What do your observations of plant growth on the four trays tell you about the kind of soil that green gram:
- Seeds prefer for germination?
  - Seedlings prefer for growth?
- Q3. If you used a different kind of seed, do you think there would be any difference in your observations? Why? When you test this, does it show what you guessed?
- Q4. What role does water play in plant growth? Think about what happens (share observations) to seedlings (their roots, leaves, stems) that grow in soil that:
- Is too dry or cannot hold water?
  - Stays too wet?
- Q5. What role does air play in plant growth? Think about what happens (share observations) to seedlings (their roots, leaves, stems) that grow in soil that is:
- Too loose?
  - Too compacted?
- Q5. What role do the following play in plant growth and what evidence supports this:
- Dry leaves and manure
  - Living organisms
- Q6. Could soil be providing seeds and seedlings with things besides water? What might these be? What evidence supports this?
- Q7. Say you were offered 8 samples of soil and asked to choose one sample that would be best for plant growth. What properties of soil would you look for and why?
- Q8. Why is it important for farmers and gardeners to improve the quality of soil?

