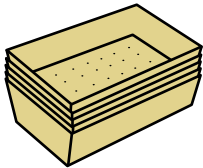


The Science Educator at Work

ACTIVITY SHEET II: DO PLANTS HELP STOP SOIL FROM WASHING AWAY?

Aim: To compare how rain affects soil in areas with different kinds of plant cover.

What you will need:



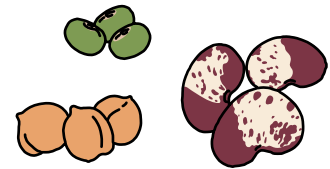
Five shallow trays or plastic containers with small holes at the bottom



Soil (dark and crumbly with an earthy and sweet smell)



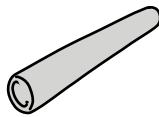
Manure



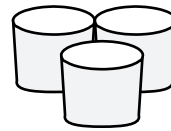
Three different kinds of seeds



Water



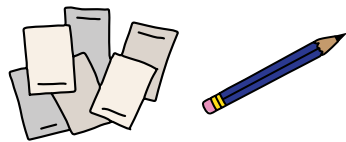
Plastic pipe (six inches long)



Five clear plastic cups



A mug



Labels and pencil



Notebook for observations

Step 1. Grow seeds on a tray (group activity):

- 1) Your teacher will divide your class into groups and give your group a tray and one batch of seeds.
- 2) Mix the manure with the soil.
- 3) Place the tray on a flat surface and ensure the drainage holes are not blocked.
- 4) Fill about 3–4 cm of the tray with soil.
- 5) Sprinkle the seeds on the soil in the tray. Make sure the seeds are evenly spaced out.
- 6) Cover the seeds lightly with a thin layer of soil.
- 7) Label your tray with the names of your group members, the name of the seed assigned to you, and the date on which you plant the seeds.



- 8) Gently sprinkle water until the soil is moist, not soggy.
- 9) Place the tray in an area that is well-lit with indirect sunlight. If this is in school, you will see the trays assigned to the other groups in your class.
- 10) Water the tray lightly every day till the seedlings grow a few centimetres tall. This can take a week or a couple of weeks.

Step 2. Seeing the effect of rain (class activity):



- 1) Bring your tray to class. The other groups in class will also bring their trays. These trays will have:
 - Tray A: Soil + manure (prepared by your teacher)
 - Tray B: Soil + manure with Seed 1
 - Tray C: Soil + manure with Seed 2
 - Tray D: Soil + manure with Seed 3
 - Tray E: Soil + manure with a mixture of Seeds 1, 2, and 3
- 2) Your teacher will place the five trays in such a way that they are on a slope. They will make a small hole at the bottom end (lowest part of the slope) of your tray and attach a plastic pipe to it.
- 3) You and your group mates can place the clear plastic cup or mug below the pipe so that it catches anything that comes out of the pipe.
- 4) Fill the mug with water. Pour it slowly and at a steady rate near the part of the tray that is at the highest end of the slope. Discuss with your classmates and fix the height from which you pour the water. This height should be the same for all groups.
- 5) One of your group members can collect the water that flows out of the pipe (run-off) in a clear plastic cup.

Observe and record:

Observe the water and soil collected in each container.



S. No.	What to observe?	Tray A	Tray B	Tray C	Tray D	Tray E
1.	Plant growth (dense, sparse)					
2.	Speed of water flow in pipe					
3.	Colour of water in cup					
4.	Amount of soil in cup					
5.	Appearance of soil surface on tray after collecting run-off					

Think about and discuss:

- Q1. Which tray loses the most soil? What evidence supports your answer?
- Q2. How does the denseness of plant growth affect the movement of water through the tray?



- Q3. Which is better at reducing soil erosion: growing one kind of crop or growing different crops together? What evidence supports your answer?
- Q4. What parts of a plant holds soil together? What evidence supports your answer?
- Q5. Which of these would show less soil erosion: forests or open fields? Why?
- Q6. Why do you think farmers grow crops or grasses on slopes?
- Q7. What might happen to soil, in places that receive heavy rains for example, if farmers grow only one crop on their fields year after year?
- Q8. Why are grasses planted along roads and riverbanks?
- Q9. Can you think of some ways we (humans) can reduce soil erosion in real life?

