

30. Soil compaction effects on erosion and revegetation

Aim

This activity replicates the action of hard-hoofed animals and vehicles on soil, and notes how these can affect the amount of erosion.

Materials (as in Pre-visit activity 29)

- Boxes or long trays of soil the same size.
- Watering can.
- Stopwatch.
- Funnel.
- 2 beakers, with millilitre measurements ranging to 1 litre.
- 2 stands (or even bricks) which can hold the boxes of soil at a constant diagonal angle.
- 2 litres of water.

Or

- Two banks or sloping area of land in the school ground. One should be grassed and one should be bare soil.
- Water from garden hose (timed amount of water).
- Device to measure water runoff at the bottom of both slopes.

Activities

To replicate the impact of animals' hooves on soil, students jump on the bare soil area, then repeat the experiment as described in activity 29: Vegetation and its effects on erosion.

Factors to look for are:

- Less amount of turbidity, suspended solids.
- Higher volume of water collected in the beaker.
- An increased speed of runoff.

Discuss why this erosion is bad for the environment (e.g. leaching, decreasing available nutrients for plants; compacted soil cannot hold as much water since there is less pore space, and consequently will not allow vegetation to grow).

Aim

To replicate the actions of native plant species trying to establish themselves in an area that has been compacted.

The set up of this practical will take some time to obtain observable results, but the actual classroom time to carry out the experiment will be less than half a lesson.

Materials

- Two bare, sloped areas of soil, in similar exposure to light.
- Grass/wheat seeds that will grow quickly.

Activity

1. Students place seeds on two bare, sloped areas of soil, one compacted and the other not compacted, and compare how many seeds germinated.
2. Repeat the experiment described in activity 29: Vegetation and its effects on erosion.



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