Soil is a complicated eco-system which plays a vital role in many Earth processes. But soil is a limited resource. Erosion from wind, rain and agriculture constantly removes the top layer of soil. This releases carbon into the atmosphere, removes organic material which was good at absorbing water and washes away vital nutrients that otherwise would have made their way into crops and onto our dinner plates.

**Equipment**
- 3 large plastic bottles
- 3 small clear plastic bottles
- String
- Dry leaves or straw
- Grass seeds
- Water

**Exploring Soil Erosion**

1. **Cut 3 small plastic bottles in half and attach string to make 3 ‘buckets’**.

2. **Cut a large, hole in the side of 3 large bottles and add 6-7 cm of soil to each**.

3. **Set up the experiment**.
   - **Bottle 1**: Bare soil
   - **Bottle 2**: Dry leaves or straw
   - **Bottle 3**: Grass *
   
   *Top tip: The grass needs a good root system. Either plant seeds and give them plenty of time to grow or use a section of established grass from your garden.*

4. **Run the experiment**.

   Pour water into each bottle until it starts to overflow into the ‘buckets’. Observe the colour of the water that comes out of each bottle.

   *Top tip: For a fair test pour the same volume of water into each bottle.*

**Results**

**Bottle 1: Brown, murky water**
Nothing is holding the soil together. The water easily carries soil particles away leading to lots of soil erosion.

**Bottle 2: Cloudy water**
The dry leaves or straw protect the soil. The water carries away less soil particles and less soil is eroded.

**Bottle 3: Clear water**
The roots from the grass hold the soil together. The water cannot carry soil particles away so barely any soil is eroded.

You may also notice that less water came out of bottle 3. This is because the roots are holding on to the water as well as the soil.