



IMPROVING OUR SOILS

TO IMPROVE OUR FOOD



Soil is the foundation of our everyday lives. We use soils to provide us with 95% of our food, but about a third of the world's arable top soil is degraded. We need to manage our soils sustainably to prevent soil loss and degradation. Farmers are stewards of the soil. This leaflet uses simple experiments you can set up at home to show ways that farmers care for their soils and how this improves the sustainability of food production.

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Experiment one: Rhizotron grow tanks

These grow tanks allow you to view different root systems and observe the importance of roots for holding the soil together, creating air spaces, reducing soil compaction, and helping plants access nutrients and water.

1. Cut the top off the 2 l drinks bottle and place the 500 ml drinks bottle inside.
2. Fill with a mix of soil or compost and sand.
3. Sow with some seeds (tip – try a mix of 2 for example fast growing pea plants, grass or clover)

WHAT YOU WILL NEED:
 2L DRINKS BOTTLE
 500ML DRINKS BOTTLE
 SEEDS
 COMPOST OR SOIL

Experiment two: Earthworm Farm

This will display the important work that earthworms do to break down dead matter and move it through the soil.

1. Cut the top off the 2 l drinks bottle. Pierce holes in the 500 ml drinks bottle and place inside 2 l bottle.
2. Add alternate layers of soil or compost and sand, sawdust or shredded newspaper.
3. Add up to 20 worms that you have dug up from your garden.

WHAT YOU WILL NEED:
 2L DRINKS BOTTLE
 500ML DRINKS BOTTLE
 COMPOST OR SOIL
 SAND, SAWDUST
 OR SHREDDED
 NEWSPAPER



USEFUL FACT
 The UK has 27 species of earthworm. They are grouped into 4 types depending in where in the soil they live, what they eat, and what type of burrows they make.

Experiment three: Soil compaction experiment

Soil compaction is one of the major contributors to global soil degradation. This experiment demonstrates how damaging soil compaction can be for drainage and highlights how important it is to manage soils for flood defence and water conservation as well as for food production.

1. Cut the bottoms off two 2 l drinks bottles and use a measuring jug to fill with equal volumes of soil.
2. Label one bottle 'compacted' and press down the soil. Label the other bottle 'not compacted'.
3. Provide the children with either a measuring jug or watering can.
4. Hold up the two bottles and allow children to pour equal amounts of water into the two bottles.
5. You can use a phone to time drainage or just observe.

Healthy soil acts like a sponge to soak up water but compacted soil doesn't so water will pool at the surface and run down the sides of the bottle.

WHAT YOU WILL NEED:
 TWO 2L DRINKS BOTTLES
 MEASURING JUG

USEFUL FACT
 Decomposed plant and animal matter in the soil can hold 20 times its weight in water.