

BE A SOIL SCIENTIST

Microbe meal

You will need: a trowel, card, a shovel, a pen, tape, a stick, and an old 100%-cotton sock.

Healthy soils are home to organisms, from earthworms to tiny microbes. If you've got a garden, bury a cotton sock to find out if the soil is full of hungry things. Make sure the sock is 100% cotton!

1. Dig a 20-cm (7.9-in) pit and put the soil on some paper.



2. Use a trowel to fill the sock with some of the soil.



3. Put the sock in the pit and cover it with the rest of the soil from the paper.



4. Tape card to a stick to make a marker. Mark the spot.



5. Dig the sock up after eight weeks. If it's been eaten, with plenty of holes, the soil is healthy because it has lots of organisms!



Health and safety

If you have a cut or graze, cover it with a plaster before touching soil. After you've touched soil, wash your hands!

Worm hotel

You will need: a 2-litre disposable plastic bottle, scissors, garden compost, soil, sand, a pencil, a spray bottle, cardboard, leaves, and tape.

Earthworms spend their lives hidden from view. Build them a worm hotel to discover what they do in the soil, before returning them to the soil to carry on the good work.

1. Ask an adult to help you cut the bottle in half, being careful with the scissors. Add a 10-cm (3.9-in) layer of soil. Spray it with water.



2. Spraying water after each layer, add 0.5 cm (0.2 in) of sand, 0.5 cm (0.2 in) of compost, and 5 cm (2 in) of soil. Poke 1-cm (0.5-in) holes in the hotel with a pencil.



3. Dig in your garden or a park to find five worms. Put them in the hotel. They'll burrow down, using the holes. Add leaves as food.



4. Worms like the dark! Wrap cardboard around the wormery to block out light. Spray the hotel with water daily.



5. After a week, see how the worms have changed the soil. There will be lots of burrows, the layers will have begun to disappear, and the leaves may have been dragged into the soil.



6. Release the worms back into their original home after your week's experiment.



Hints and tips

- Don't use worms from a compost heap. These don't live in soil.
- Look after the worms by keeping them in dark, cool, and damp conditions. Carry them to and from the wormery in a tub lined with damp kitchen towel.

Perfectly Wonky carrots

You will need: a patch of soil for growing, a trowel, a watering can, a rake, carrot seeds, newspaper, plant labels, and a shop-bought carrot.

Stones and twigs are often removed from the soil before carrots are grown. This is so they grow straight down without objects blocking their way. See what happens otherwise...

1. Carrot seeds should be sown from April until July. Rake the soil to loosen it, and dig a 1-cm (0.5-in) deep row.



2. Sprinkle the carrot seeds along the row, about 10 for every 2.5 cm (1 inch) of length. Cover with soil.



3. If there's no rain in the first few days, water the row and cover it with damp newspaper for a week or so.



4. Water the carrots often but gently, at ground level.



5. When the plants are around 10 cm (4 in) tall, thin them to one plant every 6 cm (2 in) by pulling out the smaller ones.



6. After 16–20 weeks your carrots should be fully grown! Gently pull them out of the ground.



7. Compare the carrots to a shop-bought one to see the difference!



Label the carrots with the date, your initials, and the plant name.