Super Soils & Food Waste

How are soils, food waste and climate linked?

Key Language

- climate
- soil
- environment
- agriculture
- humus
- organic
- greenhouse gas
- carbon dioxide
- sand
- clay
- minerals
- loam

What is soil and why is it important?

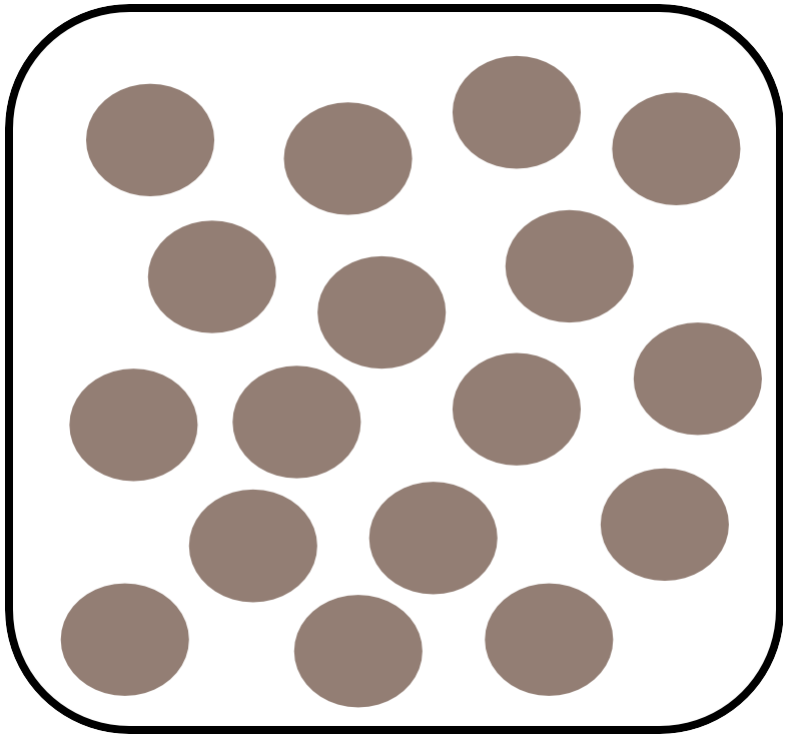
What is soil?

Minerals

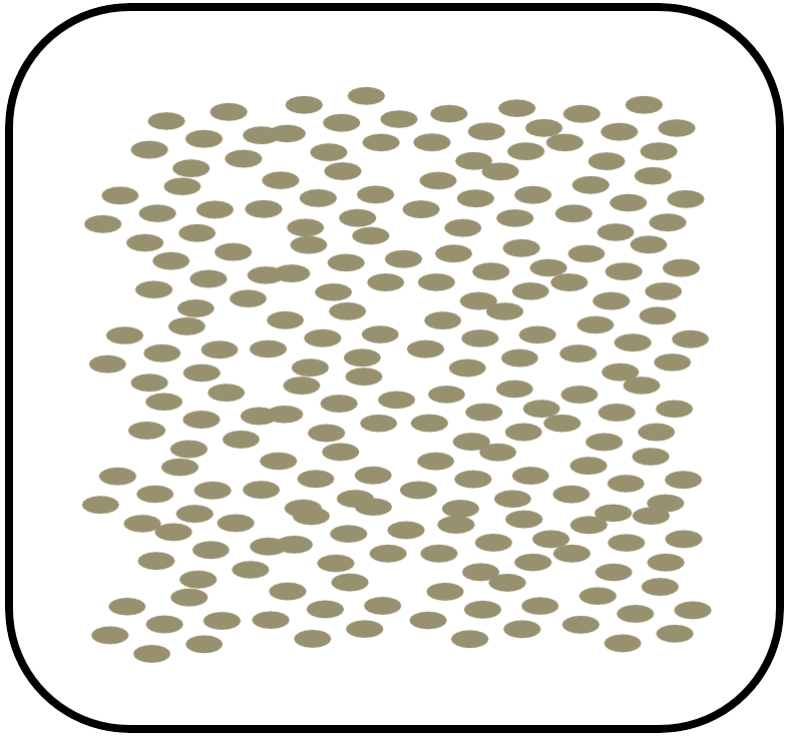
Organic material

Water and gas

Sand and Clay

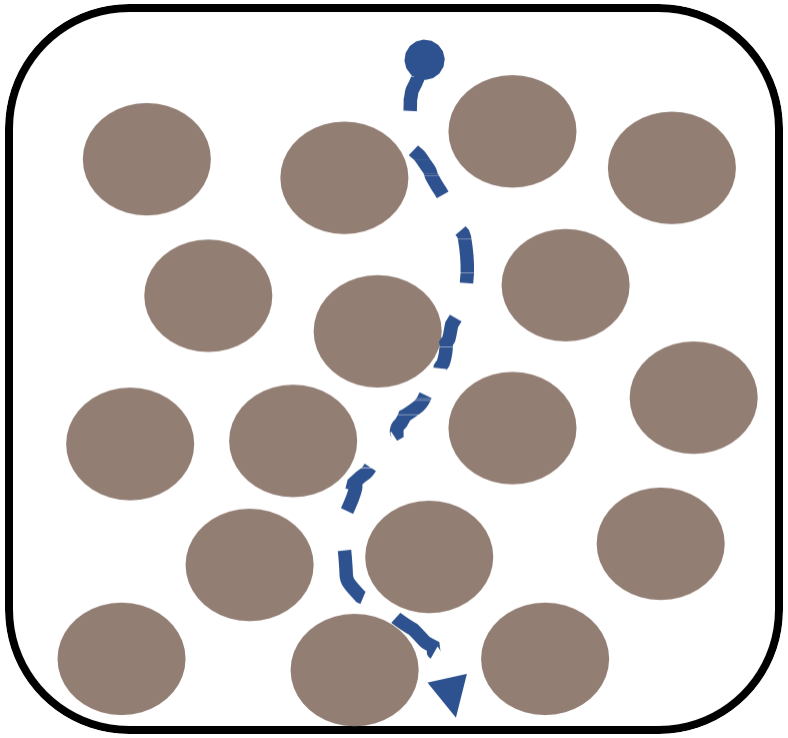


Sandy soil: made from larger particles of rock. There are lots of spaces and gaps.

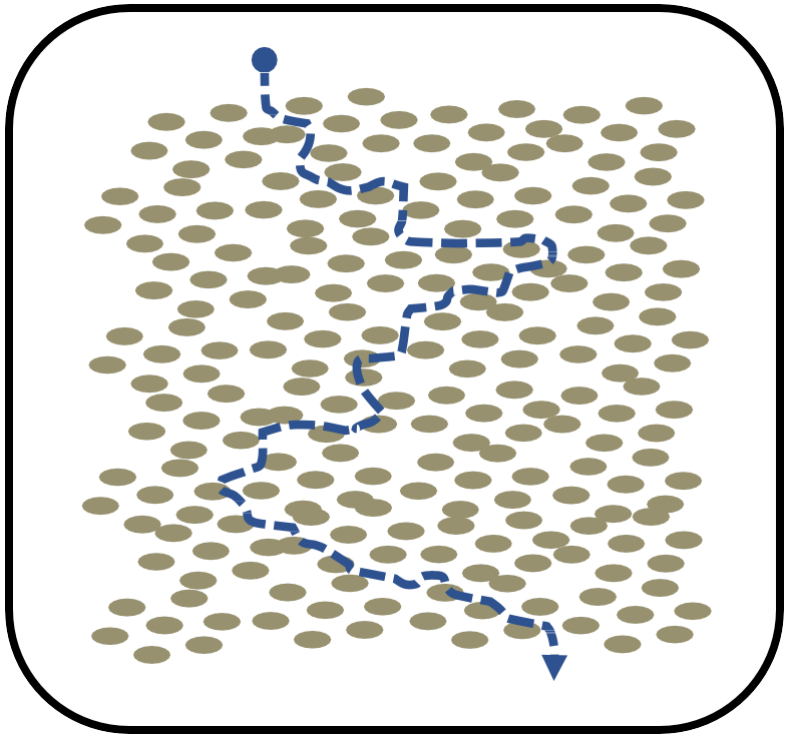


Clay soil: made from very small particles of rock. These are often flat and pack closely together.

Sand and Clay



Sandy soil: Water drains easily through sandy soil. Sandy soil can dry out very quickly. You are less likely to get mud and puddles



Clay soil: Water is held in clay soils. It can get very wet and 'muddy'. It takes longer to dry out.

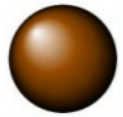
Activity 1: Soil Separation

Take a sample of soil and put it into a clean, clear jar or measuring cylinder. Add water to cover the soil and put a lid on your container. Mix and then leave the sample to settle.

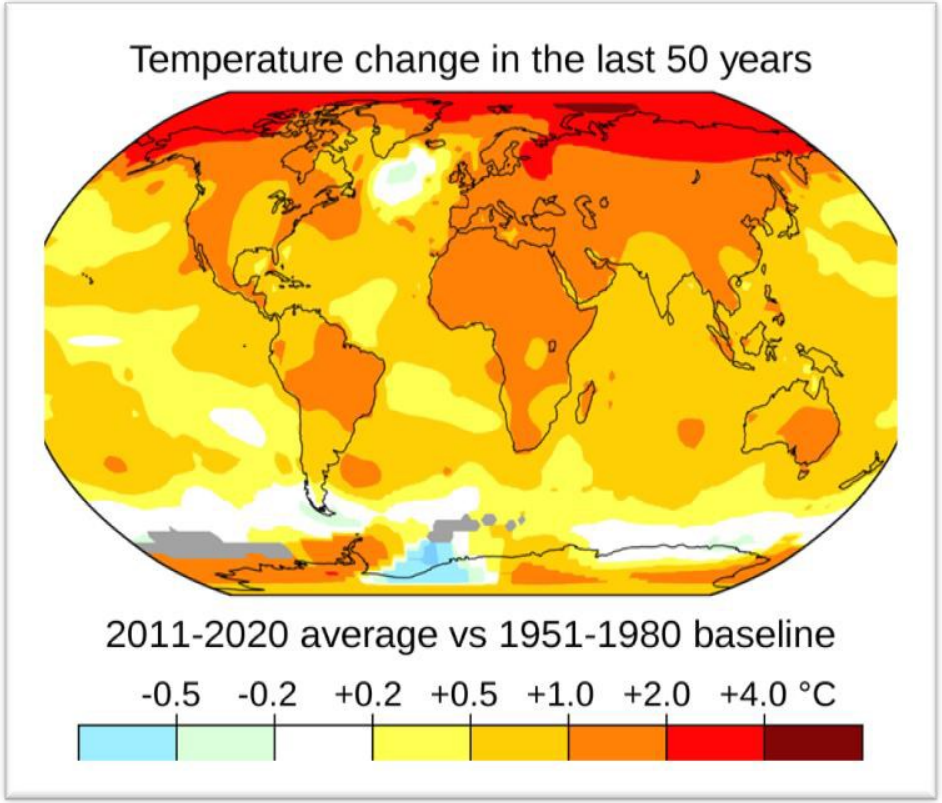
- The heaviest, biggest particles sink first (sand).
- The smallest, lightest sink last (clay).
- Floating on top will be any organic matter.

Activity 2: Soil Types

1. Take a handful of soil and wet it
2. Squeeze out the water
3. Make the shapes shown in order
4. When you can't make your shape you have your soil type

				
Cone	**Ball**	**Straight worm**	**Bent cracked worm**	**Bent smooth worm**

Shapes you can make	Soil Type
Cone only	Sandy
Cone and ball	Loamy sand
Cone, ball and straight worm	Loam
Cone, ball, worm and bent worm with cracks	Clayey loam
Cone, ball, worm and bent smooth worm	Clay



How can soil help prevent climate change?

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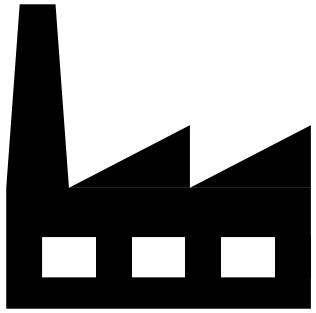
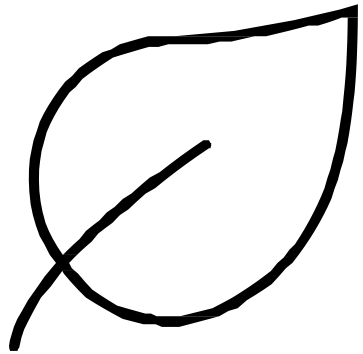
- Soil contains humus
- Humus is made of organic (living) material
- This is often things like old plant roots and dead leaves
- Different types of soils have different amounts of this humus.

How can soil help prevent climate change?

Climate change is caused by greenhouse gases like carbon dioxide. Human activity has released lots of this gas into the atmosphere.

Carbon Dioxide (CO_2)

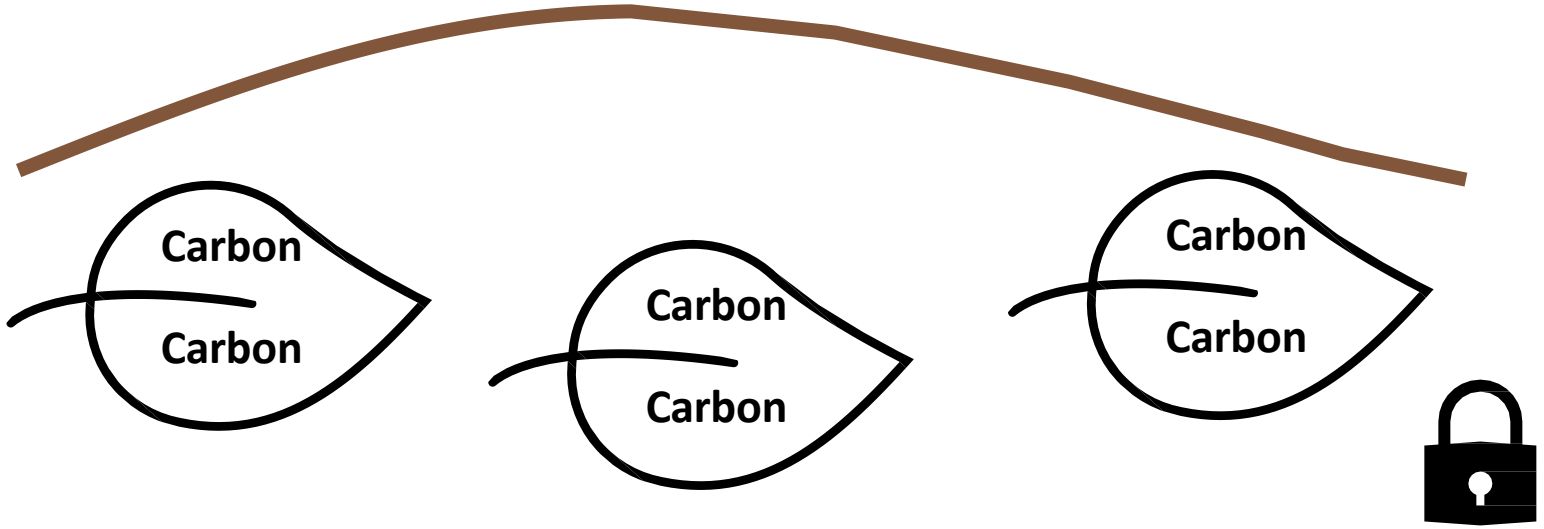




Plants use <u>carbon</u> dioxide to grow. This takes some of the gas back out of the air.

How can soil help prevent climate change?

When the plant dies it will rot and the carbon is released back into the air. If parts of the plant are mixed into the soil, this takes much longer. The carbon is locked away.



Take a look at this picture – where is carbon being stored?

How can soil help prevent climate change?

Many farmers are working very hard to improve their soils. This is good for the crops they grow, but it's also a great way to tackle climate change! The more carbon there is in the soil the less there is in the air.

Some farmers add manure (animal waste) to their soil. This can be used instead of artificial fertilisers.

Many more farmers now avoid things like ploughing (which mixes the soil) This way they're trapping more and more carbon!

Food waste

4.5 millions tonnes of food is wasted every year by UK households. Food waste is organic matter (just like we find in the soil). If it's thrown away, it rots and releases the carbon. Some food waste is collected and turned into compost. Farmers can use this on their fields as a way of fertilising their crops and trapping carbon in the soil.

It's always best to avoid waste, but composting can help reduce the impact food waste has on the environment.

Food waste

- Why is food wasted?
- Why is food waste harmful?
- What can we do to reduce the problem?

This short video may give you some ideas and help you answer these questions.

What have you learnt?

What action could you take?