Life Above and Below Soil

Healthy soil plays an important role in **ecosystems** and can help to **solve climate change** by supporting life and storing carbon. Sadly, soils are being lost 10-40 times faster than they're being replaced. Clearing land for **farming**, covering soils with **buildings** and **roads**, draining **wetlands**, and intensive farming are all contributing to this dangerous **decline**.

The loss of healthy soils is a threat to global food security, as well as to the many ecological services they provide, from nutrient cycling to carbon storage. This activity will raise your students' awareness about the importance of maintaining healthy soils.

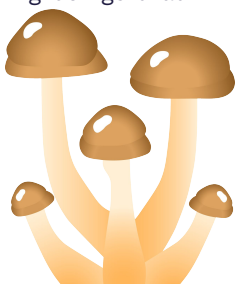
Instructions

Have your students create a poster board that shows three living beings found above the soil and three other beings that can be found in soil. Each living being should be labelled with its name and 2-3 sentences about how it lives its life, how exactly it relies on soil and, if applicable, how it helps to preserve soil. Students may need to finish off their poster and research at home. You also have the option to have them present their posters the following class.

Following this activity, we recommend discussing the importance of soil and potential solutions to soil degradation!

We need to preserve soils because they..

- Store carbon which would otherwise contribute to climate change and global warming.
- Filter water (when they seep through soil, most harmful pollutants are removed).
- Store water that plants use to grow
- Prevent floods: healthy soils can absorb and store water, which can help prevent flooding.
- Process recycled nutrients, including carbon, so that living beings that rely on them can use them over and over again.
- Provide habitats for many species



How can we help preserve or restore soil?
Sustainable soil practices and the restoration of degraded soil both help to decrease CO2 emissions, increase carbon storage, and preserve ecosystems. That's why we need to:

- **Protect soil** with increased vegetation cover. When soil is left bare, it loses more water to evaporation and it is at a greater risk of being swept away by wind and rain. Bare soils are also more vulnerable to weeds.

- **Avoid disruptive practices** like tillage. Tillage is a way of preparing land for crops, but it can break up soils and reduce their quality.

- **Crop rotation/diversification** enriches soil. Many farmers grow the same crops on the same land, year after year, but this can reduce soil quality.

- **Increase soil organic matter**. Higher amounts of organic matter increase soil quality, because nutrients are released into soil when microbes break down dead organisms (microbes are microscopic beings that live in the air, soil, and water). In addition, soil microbes compete with plant pests and they can also increase plants' ability to fend off diseases. Furthermore, greater amounts of organic matter allow soils to store higher amounts of carbon. Finally, soil organic matter holds soil together, improving its ability to retain water and reducing the risk of erosion.

We welcome feedback and would be delighted to hear your thoughts on this activity. Feel free to send an email to schools@climatescience.org and we'll be sure to get back to you soon :)