

STEAM LAB

SOIL

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Guiding Questions:

What is soil?
Why is soil important?
How can we keep the soil healthy?

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Get ready!

Click on the link below and take a few minutes to look at the photos of different soils.

<https://kids.kiddle.co/Soil>

Make 2 observations about soil from the photos.
Write 2 questions you have about soil after looking at the photos.

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Resource round up!

Watch this video to learn how healthy soil is critical to healthy life! Answer the questions after each section of the video.

<https://www.youtube.com/watch?v=I3A7OnTlSM8>

What is soil made of?

What are the 4 components that make up soil? Describe the process of how soil is formed. What is humus?

Soil Types and Properties

What are the 3 types of soil? How do they look and feel?
What type of soil is best for most plants? Why?

Soil and Plants

How does soil help plants grow?
How do plants help to maintain healthy soils?

Soil and Worms

How do worms contribute to healthy soil?

Uses for Soil

List 5 different uses for soils.

Soil basics:

https://www.ducksters.com/science/earth_science/soil_science.php

Quiz:

https://www.ducksters.com/science/quiz/soil_science_questions.php

Article: How to Prepare Soil for Spring

Read the article to learn more about how farmers prepare their soil for spring and promote soil health year round.

<https://www.agdaily.com/crops/prepare-soil-spring/>

Questions:

What are the main nutrients plants absorb from the soil?
How do farmers make sure their soil is healthy and ready to support a healthy crop?



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O Observe results of your own experiment!

Soil Profile Experiment:

Different amounts of humus, sand, silt and clay make different soil profiles. Examine the soil in your community. What type of soil do you have?

Visit the website below to learn how you can analyze your soil profile at home!

<https://www.kidspot.com.au/things-to-do/activities/craft-activities/how-to-do-your-own-soil-experiment/news-story/79a3977681b487dc763c131bf148b8f1>

Draw or write a photograph and label a picture of your soil profile. Do you think it is “healthy” soil? Why or why not?

Extension: Compare soil profiles of samples from different areas!

Soil Erosion Experiment:

Adapted from:

<https://www.agclassroom.org/teacher/matrix/lessonplan.cfm?lpid=82>

Follow the instructions below to observe how soil composition affects soil erosion (loss of soil).

- Collect three plastic bottles of equal size (1-L or 2-L). Lay the bottles flat and cut an oval shape around the top to create a “boat.” Make sure that the sides of your boat are higher than the mouth of the bottle.
- Fill two of the bottles with soil. Cover the soil in one of these bottles with leaf and plant matter. Place the sod in the third bottle.
- Elevate the far ends of the bottles so that water will drain out of them. Place a clear cup or beaker beneath the mouth of each bottle.
- Predict which soil sample will have the most erosion or the most sediment in the runoff.
- Pour an equal amount of water (100 mL) onto the soil or plant matter in each bottle “boat” and evaluate the results by looking at the colour of the runoff.
- Draw or write a photograph to describe your results. What did you observe?

W What did you learn?

Draw and label a soil profile of a healthy soil. Explain why it is a “healthy” soil.

Why is it important to protect the soil we have on Earth?

Many farmers now use a zero-till strategy. New innovations in seeds and planting mean farmers no longer need to till their soil. Instead they keep it planted and covered even when it's not producing a crop (like in the winter). How does no-till farming contribute to improved sustainability of soil health?

How can we help to conserve healthy soils?

Just for Fun...

Test your soil science knowledge with soil-ecosystem Jeopardy!

Get game instructions here:

<https://www.soils.org/files/sssa/iys/jeopardy-instructions-game.pdf>

Play Soil Science Jeopardy here:

<https://www.jeopardyapp.com/play/soil-ecosystem-services>

