DIG IT!

The Scoop on Soil.

Soil is a complex mix of ingredients: minerals, air, water, and organic matter—decaying remains of once-living things and countless organisms.

Why is Soil important? You need it for...

- Food
- Clothes
- Air & Water
- Buildings

Most of our food comes from plants anchored in and nourished by soil.
Most of the clothes we wear are made with fibers from plants grown in the soil.
Part of the oxygen we breathe is produced by plants living in the soil. Much of the water we drink and use is filtered by soil.
Nearly everything we build is built on soil (and often with it).

And the Earth needs it. Soil is the thin outermost layer of the Earth's crust.

How does soil become soil?

There are many different soils in the world. All soils are different because of where and how they formed. Over time, 5 major factors play a part in how a soil forms. Together these factors are called CLORPT.

C...Climate

Temperature and moisture influence the speed of chemical reactions, which in turn help control how fast rocks weather and dead organisms decompose. Soils develop faster in warm, moist climates and slowest in cold or arid (dry) areas.

O...Organisms

Plant roots grow, animals burrow, and bacteria eat. These and other soil organisms speed up the breakdown of large soil particles into smaller ones. Roots are a powerful soil-forming force, cracking rocks as they grow. And roots produce carbon dioxide that mixes with water, forming an acid that wears away rock.

R...Relief

The slope of the land and the direction it faces make a difference in how much sunlight a soil gets and how much water it holds. Deeper soils form at the bottom of a hill than at the top because gravity and water move soil particles down the slope.

CLORPT | 5 factors of soil formation

P...Parent materials

Just like you inherited characteristics from your parents, every soil inherits traits from the materials in which it forms. Soils that formed from limestone bedrock, for example, are rich in calcium. Soils that formed from materials at the bottom of lakes are high in clay.

T...Time

Older soils differ from younger soils because they have had longer to develop. In the northern US, soils tend to be young because glaciers covered the surface during the last Ice Age. In the southern US, there were no glaciers, so the soil has been exposed for a longer time, making them more weathered.

Dig Deeper

Soil comes in many colors—from blue-grey to brown to red. Soil has layers called horizons. These horizons may look different and they tell the story of how a soil formed over time. Together the horizons are called a soil profile (photo left).

Soils are always forming and changing


Losses. Water in soil evaporates. Nutrients are taken up by plants. Soil particles wash away in a storm. Organic matter may decompose into carbon dioxide.

Translocations (when things move within the soil). Gravity pulls water (carrying minerals and nutrients) down from top to bottom. Evaporating water draws minerals up from the bottom to top. Organisms carry material every which way.

Transformations (when things change into other things). Dead leaves decompose into smaller organic materials. Rock weatheres into soft clay. Oxygen reacts with iron, "rusting" the soil to a reddish color.

This is just the beginning of the exciting world of Soil!

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Soil Science Society of America

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