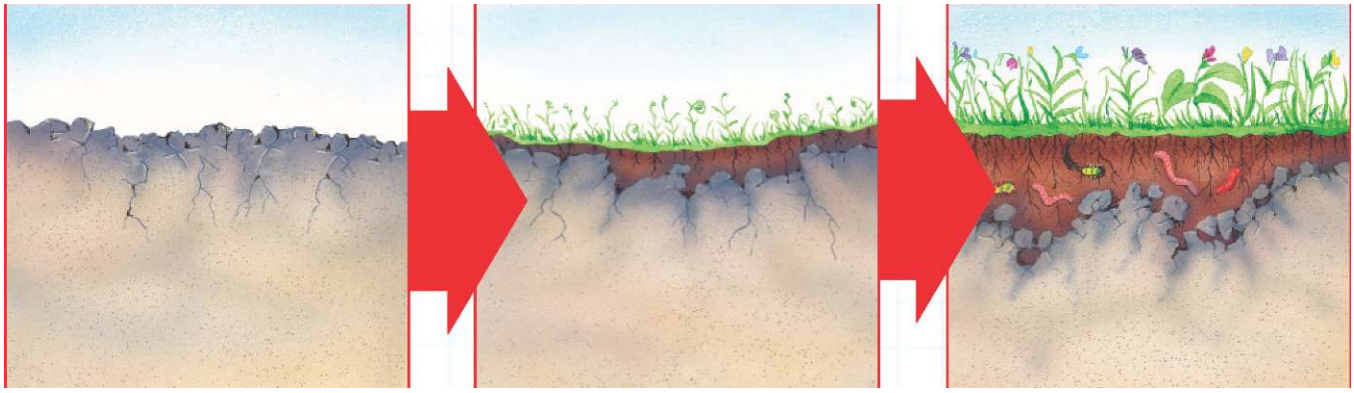
SCRAPBOOK

DIGGIN' UP THE DIRT

Earth, 1500–2000 AD

Soil is constantly being created and destroyed. But on average, the soil on Earth's surface is only 6 inches (15 cm) deep. In the past 500 years, Earth has gained approximately 1 inch (2.5 cm) of new soil. Here's how:



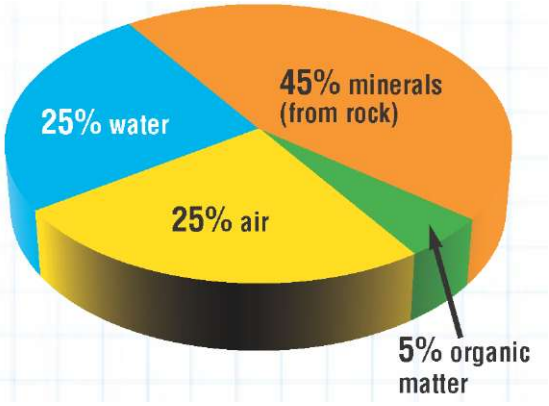
Bedrock on the earth's surface began to crack from assaults by rain, ice, freezing, and thawing.

Lichen grew on the cracked rock. The acids secreted by these plants caused the rock to crumble slowly over many years.

Horizons, or layers of soil began to form. The topsoil, or the A horizon, includes organic matter from decayed plants and animals. Just below is the B horizon, which contains minerals washed down from the topsoil. The C horizon below that is the original parent material. Bedrock lies at the bottom.

What's It Made Of?

Most soil comes from the rock that was broken down by weathering and chemical processes over thousands of years. This diagram shows the components of an average soil sample.



Scientists who study soil are called pedologists.

Weather's Role

Climate has a lot to do with making soil. It affects how quickly wind and water break down rock, and how much organic material is added to the soil

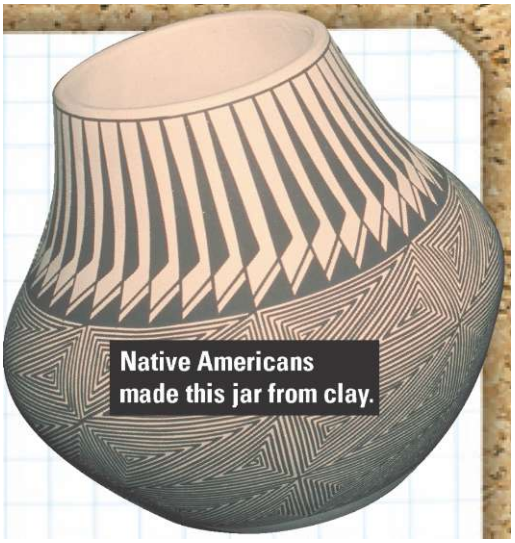
Places with warm temperatures and high humidity produce rich organic soil most easily because they encourage plant and animal growth as well as decay. Farmers and greenhouses prefer humus, or soil full of organic material, because it has lots of nutrients for plants and holds water well.

Desert regions with little precipitation have small amounts of organic matter in their soil, which means many plants don't thrive. Often sandy desert soils do not hold much water.

Sail of the Earth

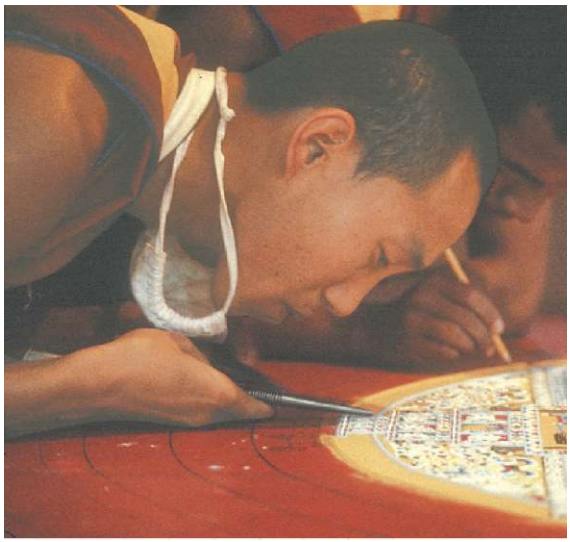
We'd be nowhere without soil. We need it to grow crops necessary for our survival. But not all soil is the same, and how much we can cultivate in a particular area depends on the type of soil found there. Agriculture is the result of the surrounding landscape, which in turn is linked to the kind of soil you'll find in any given place.

The texture of soil depends on the size of its individual particles. Let's take a closer look at the three types: sand, silt, and clay.



Native Americans made this jar from clay.

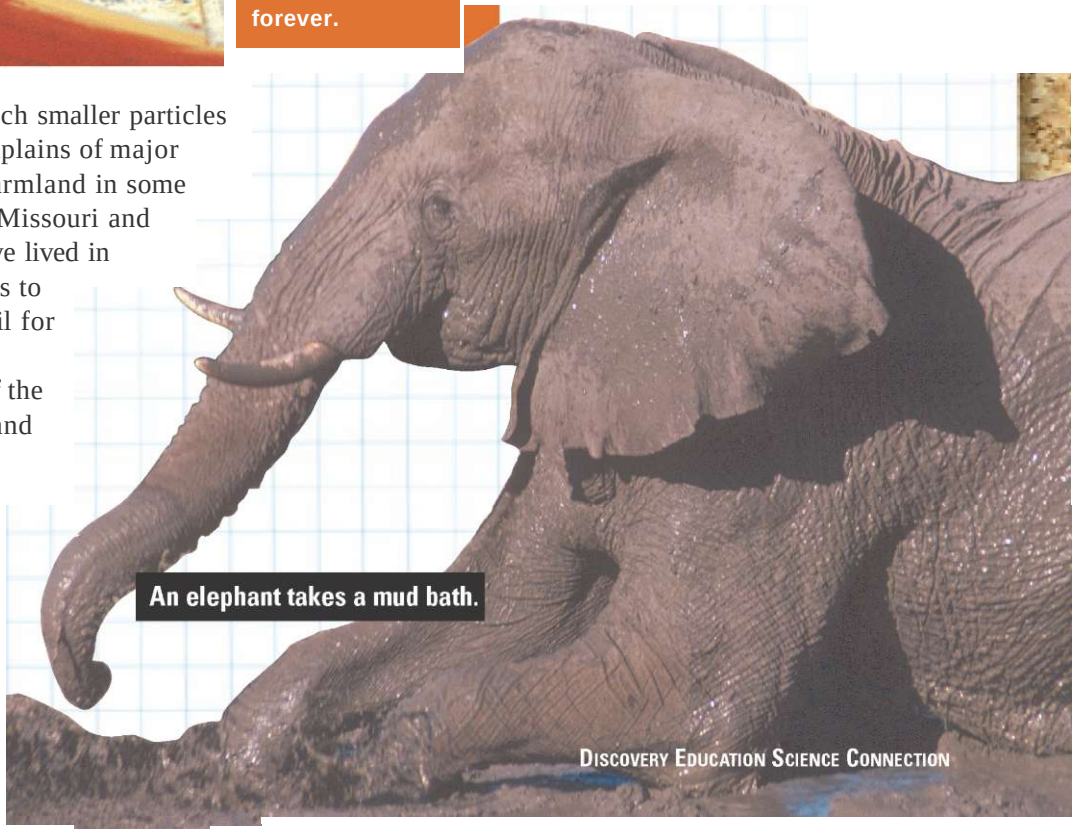
Scind Many minerals can be found in sandy soil, which has the largest particles. The soil in arid regions tends to be sandy, which explains why Arizona and New Mexico aren't good areas for raising crops. But sand has other uses. Over time we've used it to make glass and various works of art.



In Tibet, Buddhist monks use colored sand to create paintings that take days or weeks to complete. When finished, they sweep up the sand and pour it into a river or stream, to show that nothing lasts forever.

Clay The soil with the finest particles (so small that they can only be seen with a microscope) is clay. Clay will hold water much better than sandy soil, but water still doesn't flow easily through it. As a result, soil with a large percentage of clay is not good for cultivating crops. Yet clay is an essential material to us: Native Americans have used clay for thousands of years to make everything from bowls to adobe houses.

Silt Soil rich in silt has much smaller particles than sand. It lies in the floodplains of major rivers. Silt has created rich farmland in some midwestern states along the Missouri and Mississippi rivers. People have lived in floodplains over the centuries to take advantage of the rich soil for raising crops. Animals have adapted to take advantage of the rich mud found near rivers and lakes, too. Elephants, for example, take mud baths to keep their skin cool and safe from sunburn.



An elephant takes a mud bath.