

Digging into Soil!

Life on earth depends on soil; it is the primary source of food, feed, fuel, forage and fiber. It is considered a **non-renewable** resource - we have to take care of it, we can never replace it!

Soil Types



Sand

Has the largest particle size among soil types and it's dry and gritty to the touch. It doesn't hold water as well as other soil types. Plants that can grow in sandy soils include carrots, radishes, and asparagus.

Silt

Has a medium particle size. When moistened, it's slick. It compacts easily and retains water longer than sand. Plants that can grow in silty soils are trees, flowers, and tomatoes.

Clay

Has the smallest particle size of the three soil types (sand, silt, clay). It's sticky to touch when wet, smooth when dry. Plants that can grow well include broccoli, brussels sprouts, kale and cabbage.

Loam

Is ideal for gardening and farming. It is a combination of all three soil types (sand, silt, clay) plus humus (organic matter). It holds water well and is soft, dry and crumbly in your hands.

Activity

SOIL SCIENCE: Collect two soil samples from school or home. With the descriptions above, determine which type of soil you have.
CHALLENGE: Put your soil in a jar, add water, close the lid, shake and leave overnight. In the morning, you'll see soil layers. Sand settles to the bottom, silt in the middle, and clay at top. Estimate the percentage of each soil type in your soil and then create a graph to show your estimates.

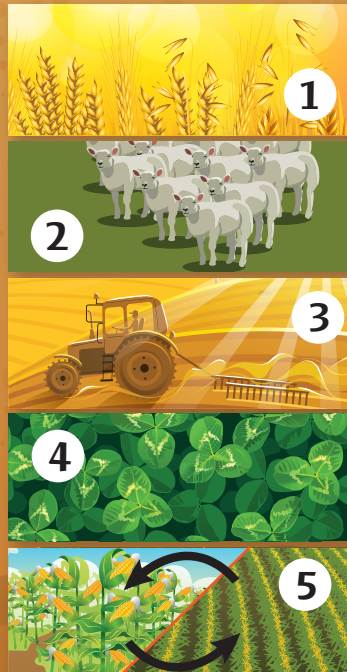
DID YOU KNOW?

Alfalfa has many benefits for soil. It is a fertilizer, naturally adding nitrogen to the soil! It's also a perennial crop, staying in the ground for 4-6 years. It improves drainage, moisture content, and aeration of soil. In addition, it hosts many beneficial insects such as lady beetles and provides habitat for wildlife such as the Swainson's Hawk.

California Farmers conserve soil!

California farmers use sustainable methods to improve the quality of the soil, minimize erosion and prevent other losses of soil.

- 1. Minimize Erosion:** Farmers plant trees and grasses which can help hold soil in place as well as provide a wind break. Contour farming uses the natural contours of the land to slow water runoff.
- 2. Rotational Grazing:** Farmers move livestock often to prevent overgrazing of pasture and rangeland. Hooves can aerate the soil by breaking the crust and allowing for better water penetration.
- 3. Reduced Tillage:** Farmers reduce the number of tractor passes across their field and allow grasses and vegetation to remain in place after harvest. This helps prevent soil from blowing or being washed away.
- 4. Cover Crops:** Farmers plant cover crops, such as clover, which can add nitrogen back into the soil and also "cover" the soil - protecting it from wind and water erosion.
- 5. Crop Rotation:** Changing or "rotating" crops in the same field each season ensures that the soil is not depleted of certain nutrients. It also helps reduce soil erosion and increase soil fertility and crop yield.



SERVICE LEARNING

Start a composting project in your backyard or school garden. Read about how composting can benefit your school and community. Check out cwmi.css.cornell.edu/composting.htm for composting information.



Erosion Activity

Erosion is a process where the surface of the Earth gets worn down or washed away. Walk the school yard and look for signs of erosion. Discuss causes and measures to reduce erosion.



CA Standards: ELA CC: RI.3-5.1, 3, 7; RI.6-8.7; W.3-5.7, 8; SL.3-8.1; WHST.6-8.7, 8; NGSS: 3-LS4-4, 3-ESS3-1; 4-ESS1-1, 4-ESS2-1, 2; 5-ESS2-1, 5-ESS3-1; MS-LS2-1, MS-ESS2-2, MS-ESS3-3
 Sources: ceventura.ucanr.edu/Com_Ag/Soils; Sonoma-county.org/agcomm/pdf/bmp_handbook3.pdf