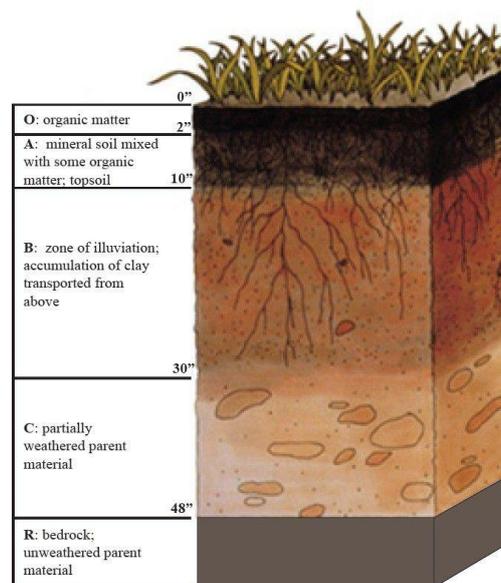


Name: Rain Zou

Username: Zouyushan

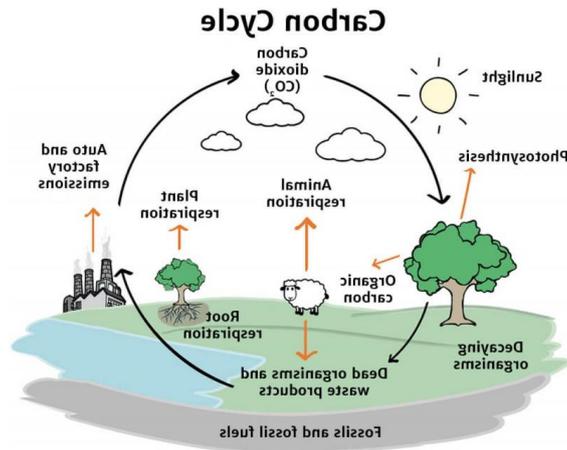
School: University of California at Berkeley

Soil observation: I observe the soil in different locations in the school. For soil covered by plants, they have darker color and they contain more moisture. By touching the soil, I think the soil is mostly made of clay. For soil directly exposed to air, their color are lighter and they contain less moisture. The soil is mostly made of sand-like particles and they are granular.



Characteristics of healthy soil and unhealthy soil: In healthy soil, carbon-based organic matter helps create pockets in the soil that store air and water. These pockets allow resident plants and animals to breathe and move easily. In healthy soil, the water that falls on top of it is quickly absorbed and stored in air pockets. When all the air pockets are filled and the soil is fully saturated, the extra water is able to drain through the soil to other deeper pockets. The spongy feel of healthy soil is because of these air pockets. Unhealthy compacted soil, on the other hand, will feel hard and solid, and limit the movement of animals and growth of plant roots. Much of the water on compacted soil is not absorbed. Instead, it runs across the soil surface, carrying away loose soil with it (in a process known as erosion). Thirsty plant roots and soil organisms beneath the surface miss out on much-needed water when erosion occurs.

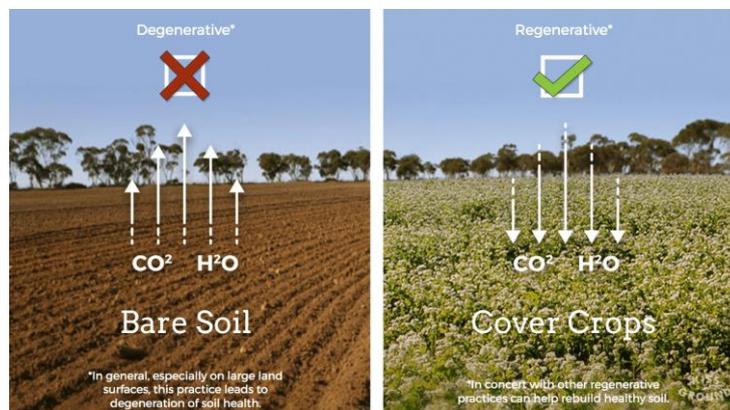
How soil traps carbon dioxide: Soil traps carbon dioxide with the assistance of plants. The plants can produce oxygen and organisms using carbon dioxide and water. Healthy soil: I researched on the indicator of a healthy soil. One important indicator is that the healthy soil contains more organisms and minerals. Whereas the unhealthy soil often contains no organism. Because of that, unhealthy soil is very vulnerable towards erosion.



Soil and climate: Soil plays an important role in shaping the global climate. As mentioned in the ‘Soil Quest’, soil is a big sink for carbon dioxide and the unregulated overuse of soil resources may severely impact climate. Besides, through my research, the albedo rate of soil, the heat capacity of soil, the rate of evaporation and transpiration, and the growth of vegetations are all important factors needed to be considered.

Conventional agricultural practice vs. Regenerative agricultural practice:

Conventional farming, also known as industrial agriculture, refers to farming systems which include the use of synthetic chemical fertilizers, pesticides, herbicides and other continual inputs, genetically modified organisms, concentrated animal feeding operations, heavy irrigation, intensive tillage, or concentrated monoculture production. Thus, conventional agriculture is typically highly resource-demanding and energy-intensive, but also highly productive. Specifically, Regenerative Agriculture is a holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience and nutrient density. Regenerative agriculture improves soil health, primarily through the practices that increase soil organic matter. What cause the degrading soil health: Erosion, for example, is degrading the soil health because it takes away valuable organisms and minerals. The overuse of chemical fertilizers will also harm the soil. Over grazing and over-harvesting are all major reasons of soil degrading.



What can we do: Regulated use of pesticides and design pesticides which have high

efficiency, low toxicity, and low residue. Replace chemical fertilizers with organic fertilizers. Organic fertilizers can provide important nutrients to the soil. We can also apply to organic farming methods instead of relying on conventional farming practice. The conventional way of farming will make the soil exposed in the air and the process of erosion will bring away most of the nutrients and minerals.

Take aways: The plants have important impacts on the composition of soil. Not only the earth nurtures the plants but the plants are nurturing the soil at the same time. Environmentalists and farmers are working together to replace conventional farming with regenerative farming. People can get involved by advocating the use of greener pesticides and fertilizers. It is of great significance to control soil problems scientifically because soil is hard to refresh. If pollution or salinization of soil occurred, it may take thousands of years to completely get rid off the pollution.

Social media post:

The image shows a screenshot of an Instagram post. At the top, the Instagram logo and a search bar are visible. The post is from the user 'gold_tiger_eye'. The main content is a diagram titled 'Carbon Cycle'. The diagram illustrates the flow of carbon between the atmosphere, land, and water. Key components include: Sunlight, Photosynthesis (plants taking in CO2), Carbon dioxide (CO2) in the atmosphere, Animal respiration (from a sheep), Plant respiration (from a tree), Auto and factory emissions (from a factory), Root respiration (from a tree), Decaying organisms, Dead organisms and waste products, and Fossils and fossil fuels. Arrows indicate the direction of carbon movement between these components. Below the diagram, there is a caption in Chinese and English, and a list of recommended users on the right side of the post.

Instagram

搜索

gold_tiger_eye

Carbon Cycle

Sunlight

Carbon dioxide (CO₂)

Photosynthesis

Animal respiration

Plant respiration

Auto and factory emissions

Organic carbon

Root respiration

Decaying organisms

Dead organisms and waste products

Fossils and fossil fuels

gold_tiger_eye Rain

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gold_tiger_eye The plants have important impacts on the composition of soil. Not only the earth nurtures the plants but the plants are nurturing the soil at the same time. Environmentalists and farmers are working together to replace conventional farming with regenerative farming. People can get involved by advocating the use of greener pesticides and fertilizers. It is of great significance to control soil problems scientifically because soil is hard to refresh. If pollution or salinization of soil occurred, it may take thousands of years to completely get rid off the pollution. @TurningGreenOrg, @KissTheGround, @CaptainPlanetFdn #PGC2022