H.C.R.1

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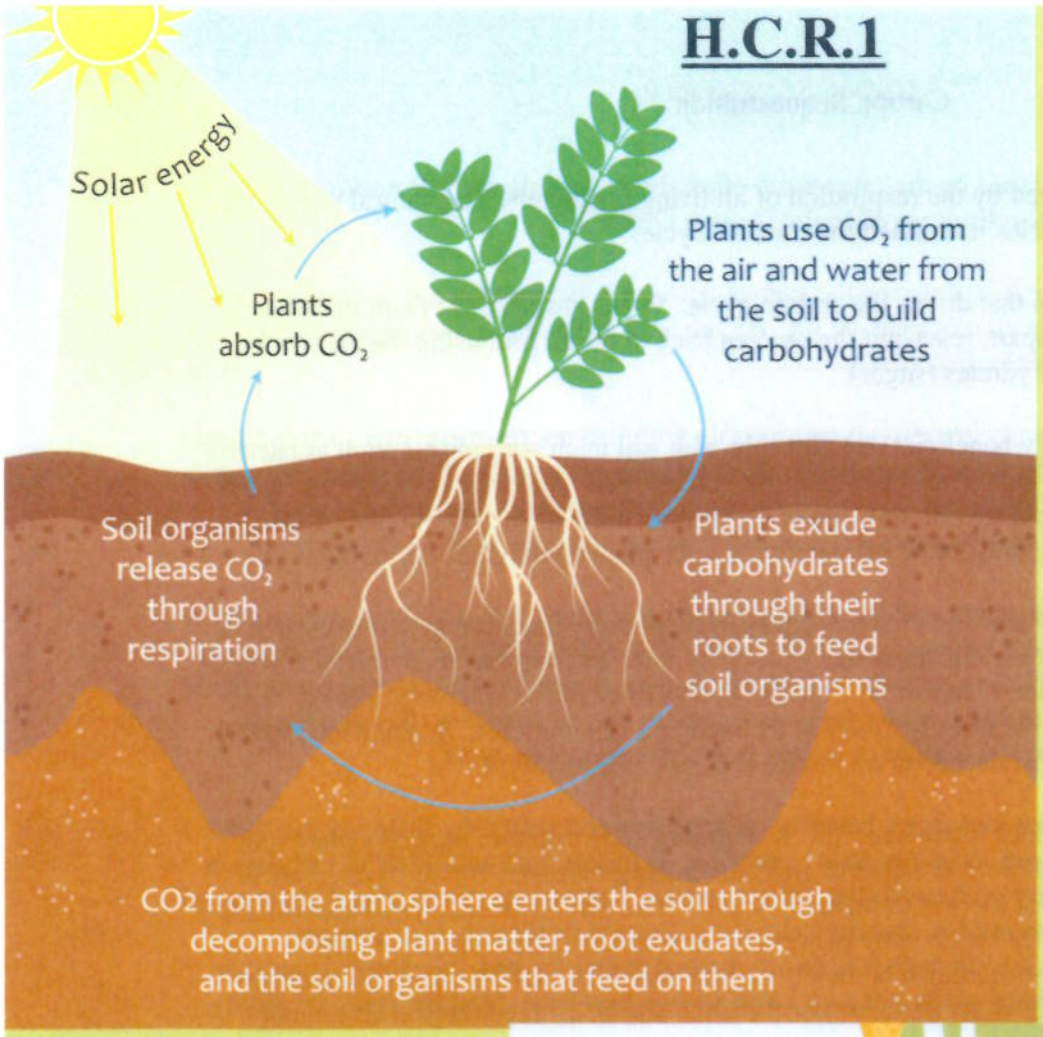
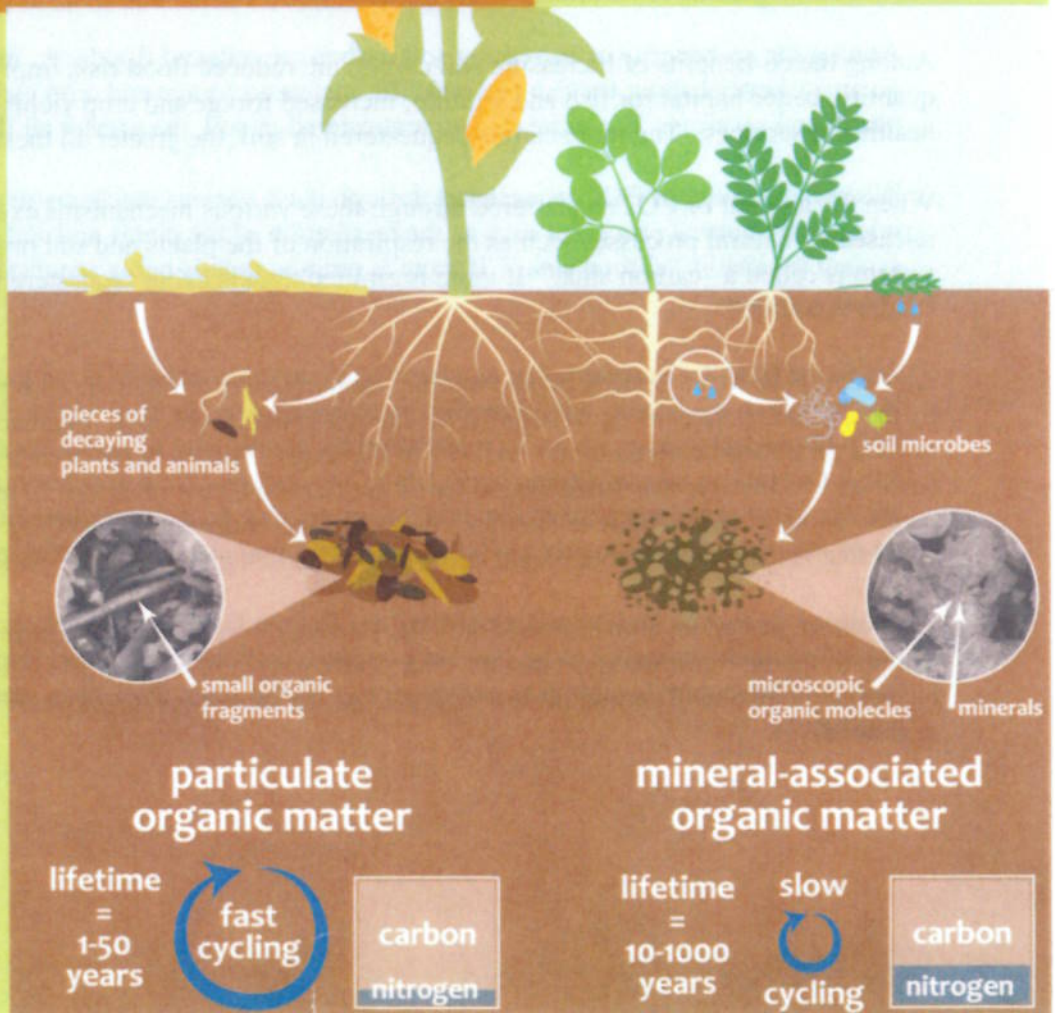


- CO2 is a byproduct of all living organisms
- The Carbon Cycle naturally removes CO2 from the air through photosynthesis.
- Plants absorb the CO2 and with light, break the molecules apart, release oxygen into the air and use the carbon for plant growth.

- Carbon is sequestered in soil through a symbiotic relationship between plants and soil microorganisms.
- This sequestration of carbon in the soil provides benefits such as improving soil structure, increasing water storage capacity, fostering root development, and making the soil more erosion resistant.
- Reduced flood risk, improved water quality and quantity, better habitat for wildlife, and restored ecosystem health and services are among the co-benefits of carbon sequestration.



Carbon Sequestration

Carbon dioxide (CO_2) is produced by the respiration of all living organisms. The natural process that removes it from the air and recycles it is called the Carbon Cycle.

Photosynthesis is the mechanism that drives the carbon cycle. Plants absorb CO_2 from the air and, using light, break the molecule apart, releasing the oxygen back to the air and using the carbon for plant growth and creating carbohydrates (sugar).

Plants have a symbiotic (mutually beneficial) relationship with soil micro-organisms such as bacteria and fungi, that thrive in healthy soils. Plants exude through their roots some of the sugar compounds they create to feed these soil organisms. In turn, these soil organisms help supply the plant with water, nitrogen, and essential minerals more efficiently than the plant could do so on its own.

It is through this interaction of plants and the soil organism community that carbon is sequestered in various forms in the soil through various processes. Some of it comes from the decaying tissues of plants, such as dead roots and leaves, and some from the bodies of dead soil microorganisms. Some carbon is sequestered in very stable form by fungi as a coating on soil particles. Science has only just begun to understand in the last decade or so just how these processes work.

Sequestering carbon in soil provides many benefits. It improves soil structure, fostering plant root development and making the soil more resistant to erosion. It makes it easier for air to circulate in the soil and increases the ability of the soil to infiltrate water. The carbon stored in soil absorbs and holds this water until the plants need it, thereby increasing drought resistance. (On average, increasing the organic matter in soils, which is mostly carbon-based, by just 1% stores on average about 16,500 gallons of additional water per acre.) Soil carbon also helps feed the soil community.

Among the co-benefits of Increasing soil carbon are reduced flood risk, improved water quality and quantity, better habitat for fish and wildlife, increased forage and crop yields and restored ecosystem health and services. The more carbon sequestered in soil, the greater all these co-benefits will be.

When the amount of CO_2 sequestered through these various mechanisms exceeds the amount of CO_2 released by natural processes such as the respiration of the plants and soil organisms, a natural system is called a "carbon sink." If more is emitted than is being sequestered, the system is a "carbon emitter."

All fossil fuels are carbon-based and burning them releases as CO_2 the carbon that was sequestered by the carbon cycle eons ago. Usually, the carbon cycle has been in rough equilibrium, with the level of CO_2 produced being naturally reabsorbed by plants. But in recent decades the rapid release of this fossil carbon has overwhelmed the ability of the Carbon Cycle to absorb it, resulting in rising CO_2 levels. Most scientists believe that it is this increasing concentration of CO_2 and other heat-trapping gases that is leading to higher global temperatures and changing weather patterns.

With our improved understanding of how the Carbon Cycle works, we can now better manage natural systems to restore those that have become carbon emitters and also more efficiently sequester increased atmospheric carbon in carbon sinks. At the same time, these many co-benefits will be generated.