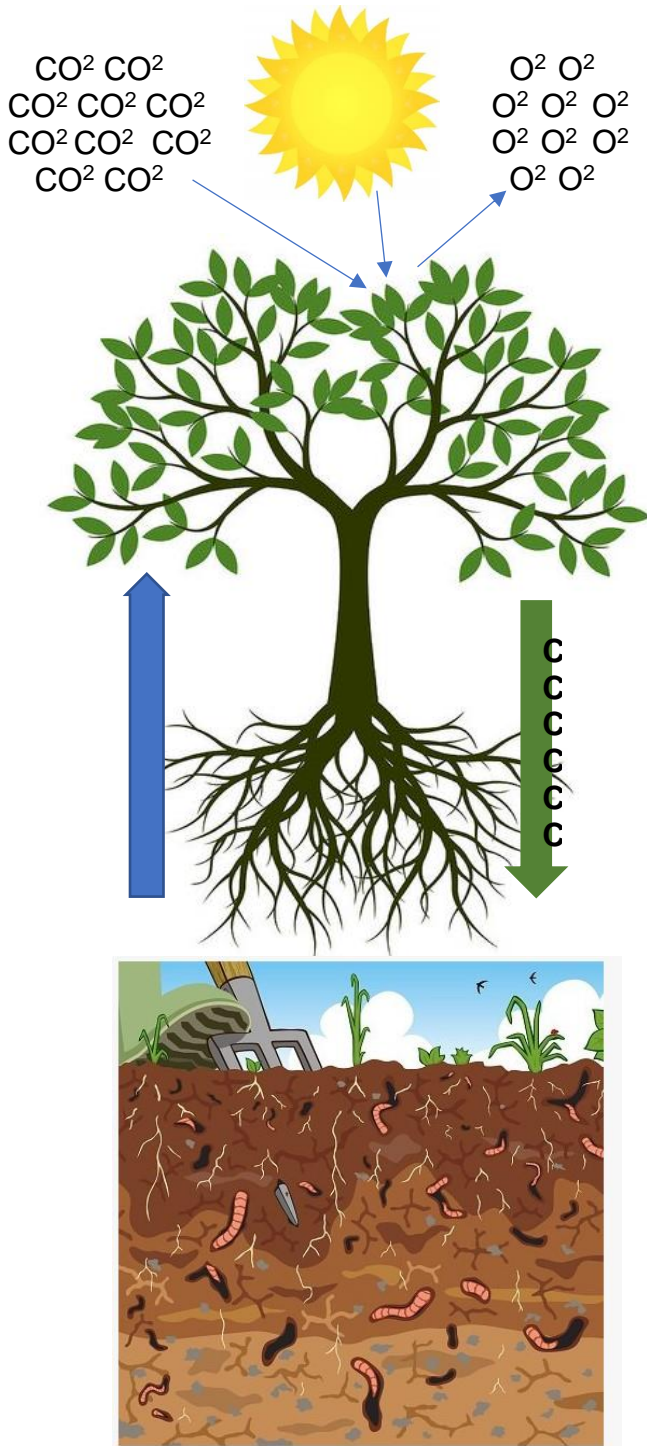


Carbon and Minerals in air, soils and plants

By Trevor Galletly and Peter Van Beek¹ Vs-1 July 23

Over billions of years a symbiosis between plants and soil micro-organisms has developed. This puts Oxygen into the air and Carbon into the soil where the soil biome builds soil structures that store the nutrients and water needed to grow healthy plants.



Green chlorophyll in leaves, algae and some bacteria uses energy from the sun to split Carbon dioxide, (CO_2) into Oxygen, (O_2) which is released into the air, and Carbon.

The Carbon is combined with water and soil minerals to produce sugars, fats, oils and other compounds such as vitamins and proteins.

The sugars and compounds are used in the growth of the plant while some of it is transported to the roots and exuded into the soil.

How much is exuded depends on the plant species and the plant's stage of development. Under good conditions, half may be exuded in the plant's life.

These exudates feed the soil biome, the countless organisms ranging from invisible bacteria to earthworms.

Diversity in plants and their exudates is needed for a more diverse soil biome and a more resilient symbiosis.

The soil biome builds soil carbon structures, puts minerals in forms that plants can absorb and creates many of the compounds that plants (and humans) need for protection against diseases and insects.

Fungi play a big role in building carbon structures. Some (mycorrhizal fungi) can find and transport minerals from a distance for direct exchange in special root cells for exudates.

These fungi function as extensions of the plant's root-system.

Destroying the plant-soil symbiosis with modern farming practices has led to many crises in agriculture. Fortunately, new knowledge has shown nature's ability to recover once we stop disrupting this symbiosis. Our experiments with high-fungal teas have shown that changes in management can strengthen the plant-soil symbiosis quickly and profitably.²

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²<https://tinyurl.com/mvecbpm2>