Nutrient Cycling | Soil Food Web School

During photosynthesis plants combine carbon dioxide from the atmosphere and sunlight to produce simple sugars and carbohydrates. But just like humans, plants cant live only on sugars and carbs.

Fortunately, for plants, there‘s a rich source of nutrients right under their feet and the soil parent material and inorganic matter. When dead plant material or organic matter falls to the surface of the soil, its gradually decomposed by microorganisms. Nutrients are then released into the soil in a plant available form. The next generation of plants then absorbs these nutrients and so nutrient cycling begins again.

Nutrient cycling

We humans remove nutrients from this cycle when we take food from our fields, but these are easily replenished when microorganisms harvest nutrients from the parent material.

At the molecule level, the parent material comprises lattice structures which hold nitrogen, phosphorous, nitrogen, boron, calcium, iron and all the other nutrients that a plant needs. With a balanced soil food web in place, plants can control the nutrient cycling happening in the root zone.

Absorption

Plants invest some of the sugars and carbs they produce during photosynthesis into the soil in order to feed bacteria and fungi. This causes bacteria and fungal populations to increase dramatically.

The bacteria and fungi then get busy harvesting nutrients from the organic matter and parent material, absorbing these

nutrients into their bodies. Predatory microorganisms are attracted and they begin consuming the bacteria and fungi.

Resilience

The wastes left behind by these predators contains an abundance of nutrients in plant available form. These are easily absorbed into the plant roots so the plant gets a good investment return.

The plant exchanges sugars and carbs in return for all other nutrients it requires. This results in well nourished, resilient plants and in nutrient dense food for us humans. With a balanced soil food web in place, plants are able to access all the nutrients they need.