

# how soil sustains ecosystems

"essentially, all life depends upon the soil... there can be no life without soil and no soil without life; they have evolved together." -charles kellogg



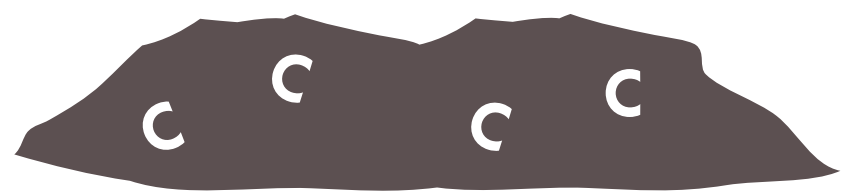
**climate regulation:**  
PLEASE WRITE!

**engineering medium:** soils support our homes, buildings, infrastructure, and parks. the type of soil (sandy, clay, etc.) and its "load bearing capacity" must be considered when laying a foundation.

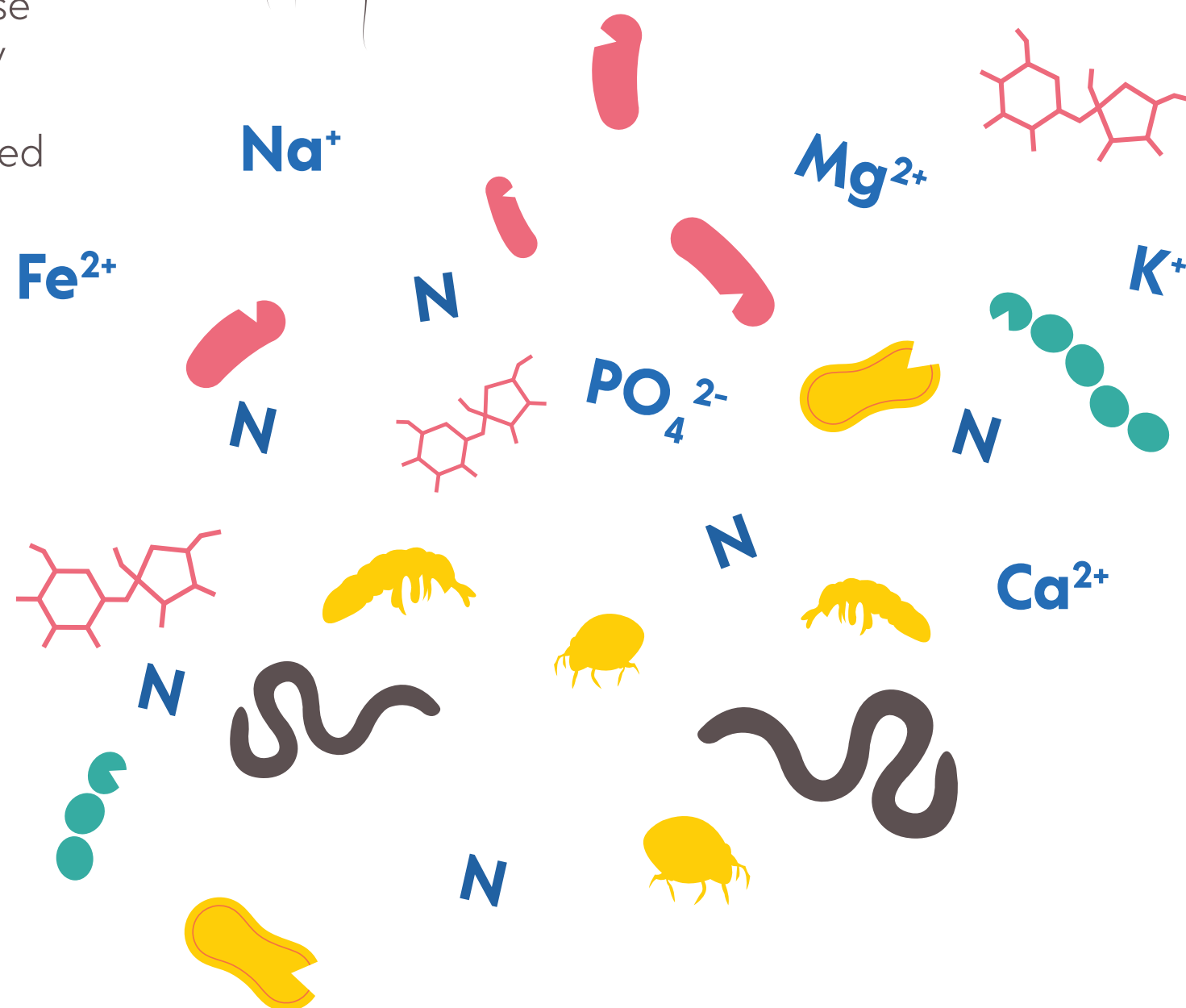
**medium for plant growth:** produces the raw materials that form the base of our global economy, providing food, fiber, flowers, fuel, 'farmaceuticals and more!

**water storage:** microbes, roots and organisms that burrow through the soil stick particles together and build structure, allowing water to infiltrate the soil. the more clay and organic matter, the more water a soil can hold.

**carbon storage:** plants take in  $\text{CO}_2$  and use it to make sugars and proteins, which they pump out their roots to feed the life in the soil. the living and dead biomass, combined with decomposing plant and animal residues stores carbon underground, reducing  $\text{CO}_2$  levels in the atmosphere.



**nutrient cycling:** as microbes feed on roots, residues, and organic matter and organisms prey on each other, nutrients are released for plant uptake.



**water filtration:** as water moves through the soil, clays and organic matter, which carry an electrical charge, hold on to contaminants, removing them from the water.

**habitat/biodiversity:**  
soils harbor 1/4 of the world's biodiversity. over a billion organisms live in one handful of soil and 90% of insects spend a portion of their lives underground.



**historical record:** like chapters in a book, soils record the history of past climate and vegetation, as well as the rise and fall of civilizations.

