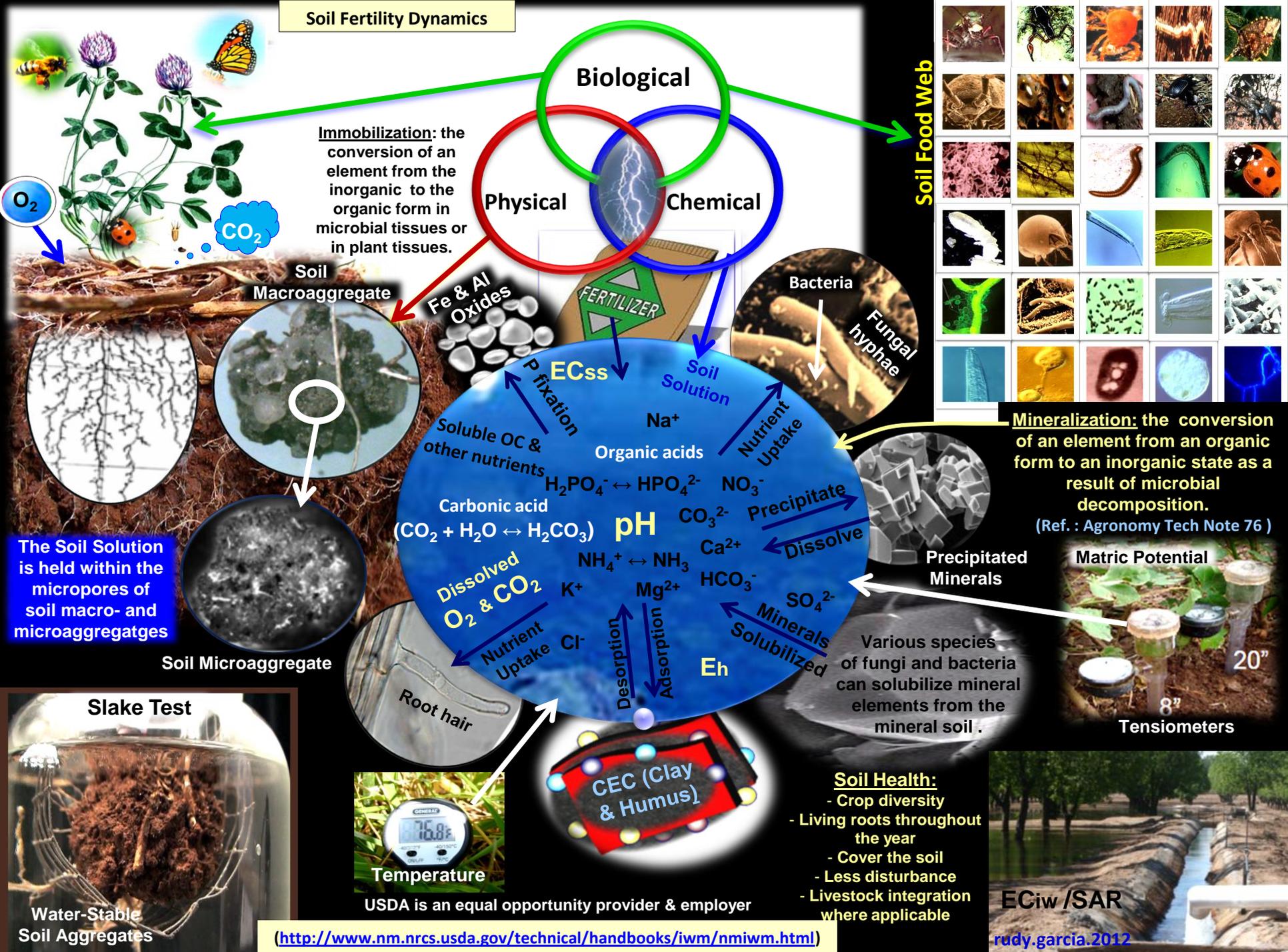


**Soil Fertility Dynamics**



**Biological**

**Physical**

**Chemical**

**Immobilization:** the conversion of an element from the inorganic form to the organic form in microbial tissues or in plant tissues.

**Soil Food Web**



**Mineralization:** the conversion of an element from an organic form to an inorganic state as a result of microbial decomposition.  
(Ref. : Agronomy Tech Note 76 )

**Soil Solution**

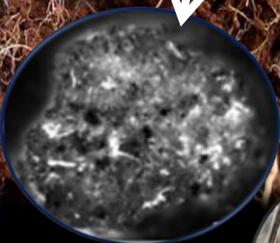
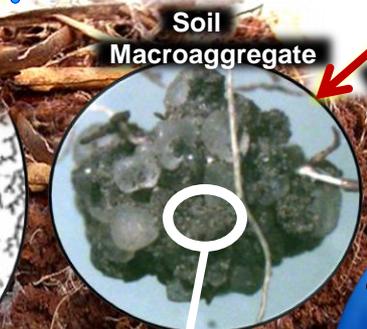
EC<sub>ss</sub> → P fixation → Soluble OC & other nutrients → Carbonic acid (CO<sub>2</sub> + H<sub>2</sub>O ↔ H<sub>2</sub>CO<sub>3</sub>) → **pH** → CO<sub>3</sub><sup>2-</sup> → Precipitate → Precipitated Minerals → Various species of fungi and bacteria can solubilize mineral elements from the mineral soil.

Na<sup>+</sup> → Organic acids → Nutrient Uptake → NO<sub>3</sub><sup>-</sup> → Dissolve → Ca<sup>2+</sup> → Minerals → SO<sub>4</sub><sup>2-</sup> → Solubilized → Eh → HCO<sub>3</sub><sup>-</sup> → Desorption → Mg<sup>2+</sup> → Adsorption → Cl<sup>-</sup> → Nutrient Uptake → K<sup>+</sup> → NH<sub>4</sub><sup>+</sup> ↔ NH<sub>3</sub> → NH<sub>4</sub><sup>+</sup> ↔ NH<sub>3</sub> → H<sub>2</sub>PO<sub>4</sub><sup>-</sup> ↔ HPO<sub>4</sub><sup>2-</sup> → Fertilizer → Fe & Al Oxides → Soil Solution

Bacteria, Fungal hyphae

O<sub>2</sub> → CO<sub>2</sub>

The Soil Solution is held within the micropores of soil macro- and microaggregates



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<http://www.nm.nrcs.usda.gov/technical/handbooks/iwm/nmiwm.html>

- Soil Health:**
- Crop diversity
  - Living roots throughout the year
  - Cover the soil
  - Less disturbance
  - Livestock integration where applicable

**Matric Potential**

