Soil Organic Compounds (Carbon, Nitrogen, Phosphorus & other nutrients) are unavailable to plants, until they are made available by microbial activity in the soil solution (e.g., predator-prey relationships participate in nutrient cycling).

Carbon is the driver of the soil nutrient-microbial recycling system. Plants uptake both soluble Inorganic N and soluble Organic N (standard soil test do not account for soluble Organic N, which can account for half of the N uptake).

Soil is an aquatic system

Soil Solution
(Soil Chemistry/Soluble Nutrients)

- Microbial activity (bacteria & fungi decompose SOM)
- Soluble Organic Carbon = microbial food (this C is about 80 times smaller than the SOM).
- Microbial derived enzymes

Microbial activity in the soil is highly related to the fertility of your soil.

The CO2 release is coupled with energy production, nutrient cycling, microbial growth and humus formation.

The process involved in the decomposition of Organic Matter and leading to the formation of humus.

Soil Humus is a major part of the SOM.

- Active Pool
- Slow Pool
- Passive Pool

Microbial action can transfer organic carbon from one pool to another.

Crop Diversity = Quality of SOM

Soil Organic Matter (SOM) is the House microbes live in.

O2

CO2

Mineralization

Humification

Plant available N (NO3-N, NH4-N, Organic N) & P (H2PO4-P, HPO4–P, Organic P) & other nutrients.

Soil N, P, K; Organic N:P; Water soluble Organic C & Organic N; Organic C:N; Ca/Al-Fe (pH); Soil Health Score, Cover Crop suggestion.

High C:N > 20:1 calculates no N & P mineralization. As C:N is lowered N & P mineralization increases but is dependent on soil microbial activity.

(Ref.: Webinar – Soil Health and New Soil Testing Methods by Dr. Rick Haney)

http://www.nrcs.usda.gov/wps/portal/nrcs/detail/nm/technical/?cid=nrcs144p2_068965

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