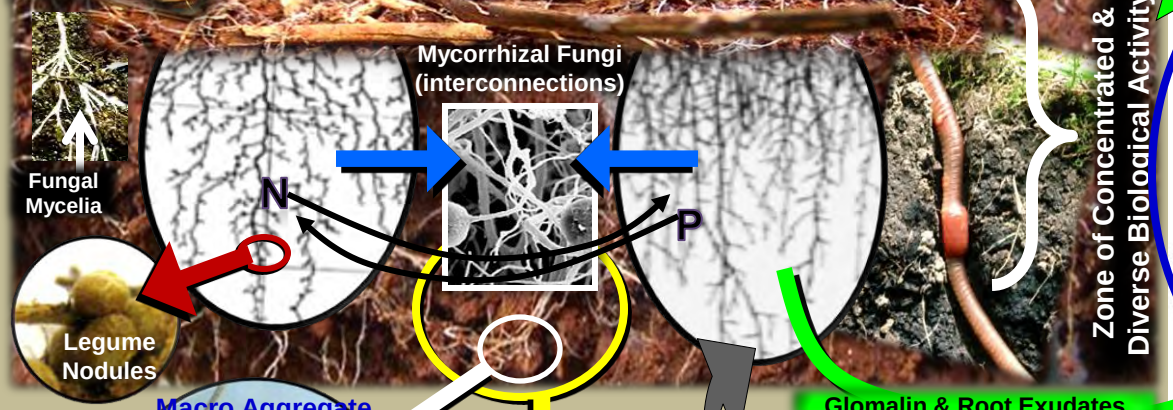
Building Soil Organic Matter (SOM)

Primary Producers



Readily Decomposable

7 - 21% SOM

Soil Food Web

3 - 9% SOM

Every trophic level must function for the Soil Food Web (SFW) to function.

Soil Humus

70 - 90% SOM

Humification: the process involved in the decomposition of organic matter and leading to the formation of humus.

The difficulty of building SOM, is that about two-thirds of the readily decomposable organic matter returned to the soil is oxidized to CO_2.

Humification

Microbial action can transfer organic carbon from one pool to another. This also results in humus decomposition.

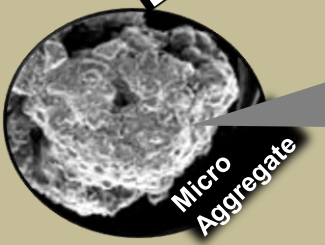
Mineralization: the conversion of an element from an organic form to an inorganic state as a result of microbial decomposition.

NOTE: Various species of fungi and bacteria can solubilize mineral elements from the mineral soil.

The rate of SOM decomposition depends on: temperature, moisture, aeration, C:N ratio, pH, organic carbon source (quantity & quality).

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

Water is held within both types of aggregates.



A combination of clay, silt, humus, POM, precipitated minerals (e.g.$CaCO_3$), etc,

Soil Health: crop diversity; living roots throughout the year; cover the soil; less disturbance; & livestock integration where applicable.

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Ref. Soil Organic Matter in Sustainable Agriculture

Evaluate soil health based on: Management system applied, % SOM, texture, structure, slake test, and other (e.g. earthworms, SFW, reactive carbon, etc.).