



Harvest (tons/ac.)

Cash Crop/Major Crop (Crop Rotations; tons/ac.)

Crop Residues (tons/ac.)

Cover Crops (Legume & None-Legume mixtures; tons/ac.)

Grazed (tons/ac.)

Carbon Dioxide (CO₂) & Heat Energy loss

Plant Organic Compounds: sugars, starches, simple proteins, crude proteins, hemicelluloses, cellulose, fats, waxes, lignins, etc.

Soil Food Web

Rhizosphere

(Photos: Soil Biology Primer)

Soil Temp.

Compost (tons/ac.)

Slow Decomposition

Oxygen (O₂)

Decomposition

Root Exudates

Decomposition

Manure(tons/ac.)

Carbon Dioxide (CO₂) & Heat Energy loss

Soil Moisture & pH

NOTE: The Crop Residues Carbon:Nitrogen (C:N) ratio strongly influences the rate of decomposition.

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

Soil Humus (Humic & Nonhumic substances): That more or less stable fraction of the soil organic matter remaining after the major portions of added plant and animal residues have decomposed. Usually it is dark in color. About 20-30% of humus in soils consists of nonhumic substances (e.g., polysaccharides). These substances are less complex & less resistant to microbial attack than those of the humic group. Some of these nonhumic substances are microbially modified plant compounds, while others are compounds synthesized by soil microbes as by-products of decomposition. Humic Substances include Humin (highly condensed, complexed with clay), Humic acids and Fulvic acids. All three groups of humic substances are relatively stable in soils.

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

Soil Humus: Active Pool

Soil Humus: Slow Pool

Soil Humus: Passive Pool

Humification

Humification

Humification