The Importance of Soil Organic Matter

Soil contains many living organisms such as bacteria, fungi, algae, actinomycetes, earthworms, nematodes, and arthropods. All contribute to the biological and microbiological activity which results in the breakdown of plant material, roots, dead organisms and other organic residues that accumulate in soils. As this organic material starts to decompose, soil organic matter is formed. Ten to fifteen percent of this organic material is readily decomposable, while the remainder takes much longer.

Soil organic matter is an extremely important component of soil. It provides nutrients for crops as it decomposes and contributes to the cation exchange complex necessary for holding applied nutrients in the soil. Soil aggregation is improved by increased organic matter content and hence has a role in maintaining soil structure, drainage and aeration; all of which are necessary for good crop yields. Soil organic matter also plays a role in increasing moisture retention and consequently the drought tolerance of the crop.

A soil with an adequate level of organic matter will be less erodible, have increased nutrient retention, and also be easier to work and plow. Other advantages include resistance to soil crusting and compaction, greater fertility, better root growth of crops, and improved crop yields.

Improvement and maintenance of the soil requires the addition of organic residues. Conditions that will result in organic matter amounts below optimum levels include excessive tillage, modern monoculture and reduced rotation cropping. Row cropping also contributes less organic residues to the soil than is generally required to maintain acceptable levels. Unlike row crops, grass forages and legumes have dense fibrous root systems that contribute a great deal of organic residue. Crop rotations that include forages or legumes will aid in the maintenance of soil organic matter, improve soil, and consequently should improve crop yields. Manure, a good source of organic residue, also improves the quality of soil.

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