THE OXIDATION OF SOIL ORGANIC MATTER WITH HYPOIODITE

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The newer concept of the nature of soil organic matter is based substantially on the study of decomposing plant residues, and the acceptance of the view that the transformations concerned are predominantly, if not exclusively, microbiological. The chemistry of soil organic matter should therefore be related directly to the chemistry of the parent plant materials, and to that of products microbi ally synthesized therefrom. Even though plant tissues are in general composed of the same constituents, the proportions thereof may vary considerably, and this fact, no less than the physical environmental conditions, may influence the nature of the active population and the route which decomposition processes will take. It has been abundantly established that extensively decomposed plant residues may similarly differ quite widely in composition as a result of the interplay of these various factors, and accordingly the probability must be faced that the more or less stable organic matter fraction of soils may likewise vary in composition according to its source and the conditions of its formation. A certain measure of similarity will of course exist, but there is no reason for supposing that in all soils the ultimate residue will be comparatively uniform. Furthermore, since the conditions within the soil are not homogeneous at all levels, the organic residues in the different horizons may be expected to vary in composition as well as in amount. In the past such variations have been indicated almost solely by differences in the C/N ratio, which throw no light on the reasons for the variations.

The next step in the study of soil organic matter must therefore be the development of some system of fractionation that will provide both qualitative and quantitative information as to its nature. A beginning has been made in the application of the so-called “proximate system” of plant analysis to the organic matter in mineral soils by various Russian workers, and in this country by Waksman and Hutchings (7). 3 No proof that these procedures are satisfactorily applicable to soil organic matter has yet been given, and it is certainly premature confidently to describe in terms of specific plant constituents the products of decomposition that will provide both qualitative and quantitative information as to its nature. A beginning has been made in the application of the so-called “proximate system” of plant analysis to the organic matter in mineral soils by various Russian workers, and in this country by Waksman and Hutchings (7). 3 No proof that these procedures are satisfactorily applicable to soil organic matter has yet been given, and it is certainly premature confidently to describe in terms of specific plant constituents the products of decomposition.