

## Evaluation of Differential Methods for Estimation of Soil Organic Matter

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### ABSTRACT

Numerous methods exist for determining organic matter or SOC in the soil, and each one has its own advantages and limitations. Consequently, a comparison of the experimental results were made for the standard and modified methods that are employed for the evaluation of Soil Organic Matter(SOM) or carbon stocks in soils. This study basically aimed at evaluating the analytical procedures used in the determination of soil organic matter and their relationships with soil type. In this study two different methods viz., Colorimetric determination and Modified Loss on Ignition were critically evaluated for the overall standards. The Colorimetric determination underestimated the concentration of organic carbon status of soils while the modified Loss of Ignition is having its own comparative advantage as evaluated by standard statistical examination. In this SOM status methods validation experiment, three different types of soils viz., Red, black and Heavy clay soils were used for test verification.

**Keywords** soil organic matter, Calorimetry and Loss on ignition

through the comparison between the different methods. Therefore, this study aimed at evaluating and comparing methods employed for the determination of SOM or SOC in soils varying in type and texture.

### MATERIALS AND METHODS

Three type soil samples such as red, black and heavy clay were collected at 0-15 cm by proper soil sampling procedures in different areas of Tamilnadu. The details representing sub-regions, soil types and use and management aspects were collected. The total number of samples was composed of three groups, from agricultural areas. The samples were obtained randomly, according to geographic coordinates specified so that in some cases native and agricultural areas did not correspond to the same soil. Agricultural areas had different historical usages, some subjected to no-tillage and others to conventional systems. Soil organic carbon was determined by two methods. For all methods three replicates were used.

**Colorimetric method (Nelson and Sommers, 1996):** A thousand milligrams (1,000 mg) of soil was ground so as to pass through a sieve of 0.5 mm mesh and placed in a 250 mL Erlenmeyer flask. Ten milliliters (10 mL) of 0.667 sodium dichromate mixed with 5 M sulfuric acid were added and