



COMPARISON OF EFFICIENCIES OF WALKLEY AND BLACK TITRATION METHOD AND COLORIMETRIC METHODS FOR THE ESTIMATION OF SOIL ORGANIC MATTER IN SRI LANKA

T.M. Navarathna¹, N.R.N. Silva², C.S. De Silva^{1}*

¹Department of Agricultural and Plantation Engineering, The Open University of Sri Lanka

²Horticultural Crops Research and Development Institute, Gannoruwa

This study attempts to render the correlation and enhanced efficiency of the Walkley & Black colorimetric method that is not a commonly practiced soil organic matter analysis method in Sri Lanka against the ordinary Walkley and Black titrimetric method used in Sri Lanka. 75 soil samples which lay amongst 0% - 8% organic matter content were selected based on data out of 400 samples which were previous analyzed using the Walkley & Black titration method for duplication using the Walkley & Black colorimetric method. Coefficient of determination (r^2) of the Walkley & Black titration method with the Walkley & Black colorimetric method was 0.9 and demonstrated a strong linear relationship between amount of soil organic matter percentage of the above two methods. According to Bland Altman plot 72 samples measurements out of total 75 soil samples are in 95% limits of the agreement area. Efficiency comparison was done considering cost, complexity, speed of performance and environmental impacts of two methods when analyzing 100 samples. Cost analysis showed Rs 1: Rs 2.24 ratio between Walkley & Black colorimetric method and Walkley & Black titration method. From this study the Walkley & Black colorimetric method was recognized as less complex, more environment friendly and a more efficient method than the Walkley & Black titration method.

Keywords: Soil organic matter, Walkley & Black method, Titrimetry, Colorimetry

**Corresponding author: csdes@ou.ac.lk*