

Research Article

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Development of analytical method for soil organic carbon, rapid, reliable, user-friendly and economical for remote areas

■ Amrit Tamang, Partha Sarathi Patra, Parimal Panda, Manoj Kanti Debnath, Gobinda Mula and Ranjan Kumar Basak

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MEMBERS OF RESEARCH FORUM:

Corresponding author :
Amrit Tamang, Department of Soil Science and Agricultural Chemistry, Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar (W.B.) India
Email: tamang_amrit@rediffmail.com

Summary

Numerous standard methods are already exist for determining soil organic carbon and each method has its own advantages and disadvantages. In present study we tried to develop a “modified colour matching method” that is rapid, reliable, user-friendly, safe, time-efficient and economical for determinations of oxidizable organic carbon (OOC) in agricultural soils. Analysis of OOC of 136 numbers of soil samples were determined by ‘Walkley and Black wet oxidation method’ (Walkley and Black, 1934) and ‘Modified colour matching method’. In the proposed method soil organic carbon is determined using 2.5 ml potassium dichromate solution with 2 ml (1.25:1) concentrated sulphuric acid. The data obtained by using the proposed method correlated strongly with the data obtained by wet oxidation Walkley and Black method. New modification safeguards the objectivity of results; since it gives the mean value of Z-test for two samples were 0.190 which is non-significant at 5% level of significance. The OOC value of a given soil sample determined by two methods did not differ largely. Maximum difference was 0.32 units and 2.9% of the total sample had no difference. In fact, 45.6, 27.2, 18.4, 3.7 and 2.2% of total sample showed the differences of 0.01-0.05, 0.06- 0.10, 0.11-0.15, 0.16-0.20 and >0.2 units, respectively. This method not only reduces the cost but it can be sufficed at remote places where soil testing laboratory are not available so, it can be easily accommodated in soil testing kit.

Key words : Oxidizable organic carbon, Colour matching method, Soil testing kit, Cost efficient

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Co-authors :

Partha Sarathi Patra, Regional Research Station (UBKV), Terai Zone (W.B.) India (Email: parthoagro@gmail.com)

Parimal Panda, Department of Soil Science and Agricultural Chemistry, Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar (W.B.) India (Email: parimal_ssac@rediffmail.com)

Manoj Debnath, Department of Agricultural Statistics, Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar (W.B.) India (Email: mkanti1984@gmail.com)

Gobinda Mulla, Department of Agricultural Economics, Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar (W.B.) India (Email: gmubkveco2015@rediffmail.com)

Ranjan Kumar Basak, Department of Agricultural Chemistry and Soil Science, Faculty of Agriculture, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur (W.B.) India