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Assessment of Soil Chemical Properties for Monitoring and Maintenance of Soil Fertility in Probolinggo, Indonesia (2022) *Proceedings of the Pakistan Academy of Sciences: Part B*, 59 (4), pp. 99-113. Cited 4 times.

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Abstract

Soil is paramount to sustaining living in biomass production, water quality control, climatic mitigation, and biodiversity endurance. Closely associated with sustainable agriculture, it degrades soil in the long run, robbing the soil of its production capacity and food-generating ability. In Probolinggo, a regency in Indonesia, intensifying the use of chemical fertilizers and pesticides yet a declining trend in yield production was discovered. This research analyzed the acid, nitrogen, organic carbon, and nutrients focusing on phosphorus, potassium, iron, and manganese contents. Organic carbon/nitrogen ratio, soil organic compound rate, and cation exchange capacity were also discussed in order to illustrate the correlations among chemical substances and their roles in soil and plant maintenance. While such a study has yet to be performed in Probolinggo, the results should show the degree of land deterioration and future attempts at damage control and correction open to facilitate. Employing a simple random method, soil and plant samples were collected from 18 villages in six districts and their chemical contents were compared to the standard set in Government Regulations No 150/2000. The results showed low N-total, P-Bray, P-Olsen, K, C-Organic, and C/N ratio availabilities at 0.18, 13.88, 14.41, 0.37, 1.36, and 7.38 respectively, contrasted to high rates on pH (5.94), Fe (153.46 mg kg⁻¹) and Mn (37.96 mg kg⁻¹). Biomass production is conclusively imperative to fix the land composition and meet the plant nutrient requirements through an organic approach; fertilizers from digester biogas are therefore recommended. This action requires field agricultural advisors to raise awareness of sustainable agriculture. © Pakistan Academy of Sciences.

Author Keywords

Environmentally Friendly; Organic Approach; Soil Deterioration; Soil Fertility Evaluation; Sustainable Development Goals; Sustainable Farming

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