



Effect of biochar on yield performance and properties of soil under tea cultivation

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Abstract: Tea [*Camellia sinensis* (L.) Kuntze] is a perennial crop which provides a productive flush for 30 to 50 years. Both quality and quantity of the yield in tea depend on various factors. Biochar application is a promising strategy to improve soil fertility level and thereby the yield. The objective of this study was to determine the effect of biochar on growth and yield performance and physico-chemical properties of tea soil. The study was carried out in Houpe Estate, Kahawatta Plantations with biochar amended (6.25 t/ha) and unamended fields. Initially, biochar was applied in 2017 and all other agronomic practices were conducted similarly in both fields. Soil samples were tested for colour, pH, electrical conductivity, moisture content, bulk density, porosity, available water content, available nitrogen, available phosphorus, exchangeable potassium, organic carbon, and cation exchange capacity. Tea yield, root growth, and soil parameters were compared performing a two-sample *t*-test using Minitab 17. Among the properties measured, a significant ($p < 0.05$) difference could be observed only in soil pH and EC. All other crop and soil parameters were not significantly ($p > 0.05$) affected by biochar application. In conclusion, biochar application had no significant ($p > 0.05$) effect on many of the parameters measured after 5 years; yet, an increasing trend was observed in the yield, root growth and also in some soil parameters. Further assessment after a few more years is suggested to confirm the consistency of the findings.

Keywords: Root growth, Soil amendment, Soil fertility, Soil chemical parameter, Tea yield