

**Effect of Organic and Conventional Management of Tea
[*Camellia Sinensis* (L.) O. Kuntze] Cultivation on Soil Productivity and
Crop Response of Tea on the Fifth Pruning Cycle**

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In organic tea cultivation, poor productivity is a major problem despite its all other benefits. This study attempted to assess long term impacts of field grown tea at the fifth pruning cycle under organic and conventional management in the long term TRIORCON trial established at Tea Research Institute, Talawakelle. Organic management treatments included tea waste, neem oil cake and compost and the conventional system was under TRI recommendations on agro inputs. Selected crop and soil indicators were studied. In parallel, beans grown on relevant soils under glass house conditions were used as indicator plants to elucidate short term effects. Data analysis was undertaken using SAS statistical package by analysis of covariance. Results revealed that chemical parameters of organically treated soils differed significantly ($P < 0.05$) from those of the conventionally treated soil. Soil pH was within the suitable range in the four treatments. Soil organic carbon contents in organic (Compost) and conventional systems were 3.69 and 2.60%, respectively. Total N content (%) was 0.40 and 0.26 under organic (Compost) and conventional systems, respectively. Soil exchangeable K shown in organically treated soil (Tea waste) was 116.25 ppm. The highest soil available P was determined in the conventionally treated soil, 53.75 ppm. The highest biological richness was exhibited as 66.42 CFU mg⁻¹ in the organically treated soils (Tea waste) whereas the lowest richness (30.25 CFU mg⁻¹) was observed in the conventionally treated soil. The overall yield drop in this organically treated cultivation system was 25% lesser than that of the conventionally treated tea. Shoot length and shoot: root ratio of beans was not significantly ($P > 0.05$) different. Proper crop and soil fertility management with organic systems is expected to maintain the organic system to be healthy and also to ensure premium price for the product while demonstrating environment and social benefits.

Keywords: Conventional soil management, Crop parameters, Organic agriculture, Soil chemical properties, Yield of tea