# Impact of organic and conventional management of tea [*Camellia sinensis* (L.) O. Kuntz] cultivation on soil productivity and post prune response at fifth pruning cycle

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**By**

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# ABSTRACT

In organic tea cultivation, poor productivity is expected despite 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 TRIORCON trial at Tea Research Institute, Talawakele. Weekly yields over past two pruning cycles, selected crop and soil indicators were studied. In parallel, beans (*Phaseolus vulgaris*) grown on soils under glass house conditions were used as indicator plants to elucidate short term effects of organic and conventional treatments. Data analysis was undertaken for using analysis of covariance using SAS Statistical package.

The results exhibited that chemical parameters of organic soils were statistically significant ($P<0.05$) compared to the conventional. Soil pH was within the range, 4.50 to 5.50. Soil organic carbon in organic and conventional systems showed 3.69 and 2.60 %, respectively. Total N (%) was 0.40 and 0.26 under organic and conventional systems, respectively. Soil exchangeable K and P levels recorded 130.25 and 53.75 ppm in conventional treatments and the lowest values recorded for exchangeable K from organic as 41.00 ppm and P from the organic as 3.25 ppm. Except Mn, other chemical parameters were statistically significant ($P<0.05$).

As at the 4$^{th}$ pruning cycle, the overall yield drop experienced in organic tea was 16.8% as compared to the conventional. The lowered tea yields could be compensated with the price premium gained in organic tea. The growth response of field grown tea and shoot length and shoot: root ratio of beans were also positive under organic management although not statistically significant ($P>0.05$). Overall results showed the importance of proper crop and soil fertility management in organic systems to ensure a healthy system and to maintain as a sustainable crop without stress conditions in organically maintained tea while demonstrating environment and social benefits.



*Key words*: Organic agriculture, conventional, soil chemical properties, crop parameters, yield of tea