# COMPARISON OF DRY MATTER PARTITIONING OF ORGANICALLY AND CONVENTIONALLY GROWN TEA FOR CARBON SEQUESTRATION POTENTIALS

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# ABSTRACT

Organic tea production is recognized as a sustainable system and a productive and cost effective alternative to conventional tea cultivation. Though dry matter partitioning in tea is considered as an indicator of system healthiness and sustainability, it has not been scientifically validated in tea. Further, data on carbon sequestration which is an adaptation strategy to climate change in tea was scares.

Hence, in this study, the potentials of organic tea cultivation in sequestering carbon in biomass and soil than in the conventional system were studied as the information on Carbon storage by tea plantations can fill the gap for comparison with native forests and changes in agricultural land use etc.

The assessments at the fourth prune, post prune recovery, dry matter partitioning, nutrient analysis of soil and leaf litter was compared in the organic and conventional systems of long term 'TRIORCON' trial established at Talawakelle. The results showed that the mean fresh weight dry weight ratio of both prunings and whole bush was higher under organic system than the conventional system. The number of shoots emerged per bush; number of prune cuts per bush and prune cut diameter was higher in the organic system. This was due to the presence of more than 30% of dry matter in the root system in organically grown tea. Hence the starch content of the root system is higher in organic system the recovery after pruning was superior. Overall results highlighted that the organically growing tea seemed to sequester a comparatively greater volume of carbon than that of conventional system.

Similarly, soils of organic tea growing system exhibited a greater organic carbon as compared to the conventional system of management. The results supported that the organic cultivation methods in tea assist in carbon capturing and accumulation and a firm means of carbon sequestration with least usage external inputs and maximizing accumulation and conservation of dry matter and carbon sources.



**Key words**: Organic tea, Dry matter partitioning, Carbon sequestration, Climate change, Sustainability