

# ORGANIC CARBON CONTENT AND STOCK IN THE RUBBER GROWING SOILS OF SOUTH INDIA

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Variations in soil organic carbon (OC) content and stock in the rubber growing soils in different states in South India were studied. Soil samples were collected from the traditionally rubber grown areas in Kerala and Tamil Nadu and also from recently cultivated areas in Karnataka, Goa and Maharashtra states. One composite sample (0-30 cm) of three sub samples from each unit of 50 ha rubber area were collected. Soil core samples also were taken to estimate the coarse fraction (gravel > 2 mm). Soil OC estimations and the volume and weight of gravel and fine earth (< 2mm) were determined following standard protocols. Based on the OC content (%) and weight of the fine earth portion, the stock OC present in the 0-30 cm soil layer was estimated on tonnes ha<sup>-1</sup> basis and the samples from each district / state were categorized to low, medium, high and very high classes. It was observed that more than 90 per cent of the soil samples from rubber grown areas in all the districts / states belonged to the medium, high or very high status. Considerable variations were noticed in the percentage distribution of samples among the high and very high classes based on OC content and OC stock. However, as observed in the case of OC content, more than 90 per cent of the soil samples were adequate in stock OC also in all the districts / states, except in Thiruvananthapuram and Palakkad districts. The OC stock in rubber growing soils in South India ranged from 36.5 to 61.4 tonnes ha<sup>-1</sup>.

**Key words:** Gravel volume, Rubber growing soils, Soil organic carbon, Soil organic carbon stock

## INTRODUCTION

Soil organic matter or soil organic carbon (OC) as it is often reported is described as an important indicator of soil quality or productivity of an agricultural system (Bot and Benites, 2005; Wander, 2004). It is the only soil component that influences the

entire soil properties *viz.* physical, chemical and biological. Most important soil functions such as infiltration, compaction, water holding capacity, erosion resistance, bulk density and nutrient retention are greatly regulated by the quantity and quality of soil organic matter (Weil and Magdoff,