

# STATUS AND DISTRIBUTION OF ZINC IN THE ULTISOLS OF SOUTH INDIA UNDER RUBBER CULTIVATION

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Status and distribution of total and different fractions of zinc (Zn) in the nine major series of the rubber growing soils of South India was assessed. Total Zn status of the soil was comparatively low and the values for the Ap horizon ranged from 47.9 to 81.7  $\mu\text{g g}^{-1}$ . Major share of the total Zn was in the residual fraction which ranged from 25.9 to 70.8  $\mu\text{g g}^{-1}$  in the Ap horizon among the series. The water soluble plus exchangeable fraction of Zn for the Ap horizon ranged from 0.19 to 1.83  $\mu\text{g g}^{-1}$  among the series and the values reduced down the horizons. Among the nine series, the plant available fraction of Zn was found to be extremely low in Kanjirappally, Thiruvanchoor and Lahai series. Low status of total Zn indicates chances of depletion of Zn reserve with repeated cycles of cultivation. Replenishment of Zn through fertilizer to these soils especially to Kanjirappally, Thiruvanchoor and Lahai series may be beneficial for improving the plant growth and maintaining/sustaining the Zn status of the soil.

**Key words:** Acid soils, Laterite soil, Plant available zinc, Rubber growing soils, Ultisols, Zinc fractions

## INTRODUCTION

In India, the traditional belt of natural rubber (*Hevea brasiliensis*) cultivation is confined to a narrow tract in the western side of the Western Ghats, mainly in the state of Kerala and Kanyakumari district of Tamil Nadu state. In this traditional belt, cultivation of rubber is now in the third or fourth cycle, each cycle being 25 to 30 years long. The soils of this tract are laterite and lateritic types, red soils, forest soils and alluvial soils. These soils are acidic in reaction with pH ranging from 4.5 to 6.0 (NBSS and LUP, 1999; Karthikakuttyamma *et al.*, 2000; Joseph, 2016).

Natural rubber (NR) growing soils of Kerala and Tamil Nadu have been characterized as per modern soil taxonomy into 62 soil series. Among the 62 series, 51 were under Ultisols, nine were under Inceptisols and two were under Entisols (NBSS and LUP, 1999). Low Zn content of the rubber growing soils in the traditional belt of NR cultivation was reported by Joseph *et al.* (1995). Further, through an extensive study covering 9682 surface soil samples from the NR growing tract of Kerala and Tamil Nadu it was reported that 41.0 per cent of the soils were deficient in available Zn (NBSS and LUP, 1999). Recently, Philip *et al.* (2020) reported that 50 per cent of the