RESPONSE OF MATURE RUBBER TO FERTILIZERS IN THE ULTISOLS OF KERALA, SOUTH INDIA

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Field experiments with graded levels of N, P and K fertilizers were conducted in mature rubber, clone RRII 105, in farmers field in six locations of Kerala representing the major soil series, *viz.* Kanjirappally, Thiruvanchoor, Kadamband and Kunnathur. The treatments were N, P_2O_5 and K_2O @ 18:18:18, 36:36:36 and 54:54:54, standard general fertilizer recommendation (GFR) of 30:30:30 $kgha^{-1}$, soil test based fertilizer recommendation (DFR) and "a no" fertilizer control. The yield data showed no statistical difference among the treatments in the four locations where the soil was either Kanjirappally or Thiruvanchoor series. However, significant response to higher levels of fertilizer was observed in Kadambanad and Kunnathur series having high gravel content, indicating that fertilizer response in rubber is related to the soil properties and the capacity of the soil to supply the nutrients.

Key words: Dry rubber yield, Fertilizer response, Small holdings, Ultisols

Commercial cultivation of rubber in India commenced 11 decades ago in Kerala and major share of the rubber growing regions in India is in South India extending from Kanyakumari district in Tamil Nadu to southern districts of Karnataka in the North (Vijayakumar *et al*., 2000). At present the rubber cultivation is in the third or fourth planting cycle and continuous cultivation of rubber has depleted the soil properties (Karthikakuttyamma, 1997; Karthikakuttyamma *et al*., 1998; Ulaganathan *et al*., 2010). Soils of the traditional rubber growing regions are mainly Ultisols (NBSS & LUP, 1999). In general, Ultisols are poor in available nutrients with low soil pH, base saturation, CEC and high content of iron and aluminum oxides.

Though use of fertilizers to rubber is an established practice for better growth and yield, indiscriminate fertilizer application has often found to depress both growth and yield (Pushparajah, 1969; Guha *et al*., 1971; Punnoose *et al*., 1976). Good management in the immature phase of rubber plantation improves the soil fertility status and reduces the fertilizer requirement in the mature phase especially in the initial years of tapping (Punnoose *et al*., 1976). However, the response to the applied fertilizers in mature rubber through yield increase, is little or difficult to establish and differ widely with the nature of the soil and agro-management practices (Pushpadas *et al*., 1978) and inconsistent positive response or absence of response was reported (Punnoose

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