FERTILITY STATUS OF RUBBER GROWING SOILS OF KARNATAKA, SOUTH INDIA

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Received: 28 January 2021 Accepted: 16 April 2021

Prasannakumari, P., Jessy, M.D., Philip, A., Pradeep, B. and Jacob, J. (2021). Fertility status of rubber growing soils of Karnataka, South India. *Rubber Science*, **34**(1): 80-90.

Fertility status of the rubber growing soils of Karnataka was assessed and the spatial variability of various soil fertility parameters was delineated by geospatial analysis and mapping. The study showed that rubber growing soils of Karnataka in general were highly acidic in reaction with 62 per cent of the soils in the very strongly acidic category. These soils were characterized by high or very high organic carbon status. While the entire area was deficient in available phosphorus and sulphur, majority of the areas was deficient in available potassium, zinc and boron. Available magnesium status was high in 90 per cent of the area.

Key words: *Hevea brasiliensis*, Natural rubber, Rubber growing soils, Soil fertility status, Spatial variability

INTRODUCTION

Rubber growing areas in Karnataka lie between 74° 34' 50.2" E to 76° 21' 20.7" E and 11° 55' 42.3" N to 14° 39' 12.2" N, which includes the coastal districts of Dakshin Kannada and Udupi, and the south interior districts of Chikmagalur, Coorg (Kodagu) and Shimoga. Out of these districts, 65 per cent of rubber cultivation was from Dakshin Kannada district followed by Udupi (15%), Chikmagalur (8%), Coorg (7%), and Shimoga (5%) (Pradeep *et al*., 2015). Area under rubber cultivation steadily increased from 1985 onwards, and during the first half of the current decade, the area expansion took place at a faster rate. Currently 47,055 ha is under rubber cultivation in Karnataka, which constitutes about six per cent of the total rubber area in India (Rubber Board, 2018).

Assessment of spatial variability in soil fertility parameters is important for identifying fertility constraints of a particular region and for effective soil resource management. Global Positioning System (GPS) and Geographic Information System (GIS) combined with geo-statistical methods are effectively used for preparing geographical distribution maps of soil properties based on limited number of samples collected in soil surveys (Behera *et al*., 2016; Brevik *et al*., 2016). Kriging simulation technique is used extensively to predict values at un-sampled locations by spatial correlation (Saito *et al*., 2005; Pereira *et al*., 2013). The present study is a part of the major project on fertility mapping of soils of the traditional rubber growing tract in South India, conducted to generate a baseline data on soil fertility status, using GIS-based interpolation technique.

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