CURRENT STATUS AND FUTURE PROSPECTS OF MAPPING RUBBER PLANTATIONS IN INDIA

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Present study utilized earth observation satellite data to map acreage of existing natural rubber plantations in India to develop a geo-spatial decision support system for the NR plantation sector in the country. Indian and foreign satellite data were used in the study. Multi-resolution and multi-temporal satellite data were acquired according to phenology of rubber trees for delineation, mapping and estimation of the spatial extent of NR plantations. Standard visual interpretation, satellite data classification, on-screen vectorization, extensive ground truth, survey data of NR area statistics, *etc.* were followed to complete the study. Results found that satellite-derived acreage of NR plantations of age three years and above in the country was estimated to be around 7,22,440 ha. The spatial extent of NR plantations estimated was the highest in the state of Kerala (5,58,600 ha) followed by Tripura (76,954 ha), Karnataka (31,232 ha) and Assam (30,804 ha). Traditional NR growing regions contributed 77 per cent of the total NR plantations in the country, followed by North-eastern states (18%) and Konkan region (5%). Multi-spectral satellite sensors used in this study (both Indian and foreign) were found effective for mapping NR plantations' age three years and above at different scale. Spatial distribution maps of NR were geo-spatially analysed and different useful scientific outcomes were generated. Remote sensing based acreage of NR plantations, scientific uses of geo-referenced NR area distribution maps and necessity of updating the mapping of NR plantations in the country (using latest satellite data) are discussed. Use of geo-spatial technology for mapping entire NR plantations in the whole country was a first attempt in India and it is a powerful tool to monitor changes in the NR plantation landscape of the country in time and space.

Key words: NR acreage, NR plantations, Remote sensing, Satellite data, Spectral reflectance

INTRODUCTION

In India, traditionally natural rubber (NR) (*Hevea brasiliensis*) is cultivated in Kerala and Kanyakumari district of Tamil Nadu (RRSC and RRII, 2012). The other places where rubber is cultivated in the country are North-eastern states, Konkan region of Karnataka, Goa, Maharashtra, parts of Eastern states like Andhra Pradesh, Odisha, West Bengal and Andaman & Nicobar Islands. Traditional area produces 90 per cent of NR in the country but the recent trend showed that NR cultivation was fast expanding in the Konkan region of Karnataka and North-eastern states of India (Pradeep *et al.*, 2015; RRSC and RRII, 2012). Demand for NR is expected to go up in coming years and expanding NR cultivation is urgently needed to meet the rising demand. Hence, it is important to support

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