

APPLICATION OF REMOTE SENSING AND GIS FOR ESTIMATING AREA UNDER NATURAL RUBBER CULTIVATION IN INDIA

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Area under natural rubber (*Hevea brasiliensis*) cultivation is expanding globally due to its increasing demand in engineering and industrial applications. In India, natural rubber (NR) traditionally grown in Kerala and Kanyakumari district of Tamil Nadu plays a central role in the economy of the country and large areas are being brought in to rubber cultivation in parts of Karnataka, Maharashtra, Assam, north-eastern states *etc.* Estimation of area under NR cultivation and its spatial distribution are vital for planning and decision making by the Rubber Board, under Government of India to promote and develop NR in the country. The present study aims at mapping the area under NR cultivation in Kerala and Kanyakumari district of Tamil Nadu using satellite images and to study its distribution with respect to elevation, slope and Soil Management Units (SMU). Multi date satellite data of IRS P6 LISS III was classified to delineate spatial extent and distribution of district-wise NR area. The total area under NR cultivation above three years estimated in Kerala and Kanyakumari district of Tamil Nadu using satellite data was 5,19,909 ha. According to survey statistics this was 5,14,524 ha. Natural rubber accounted for 12.2 per cent of the total geographical area as of 2005-06 and its spatial distribution was mainly confined in the mid altitudes (up to about 500 m MSL). Natural rubber area as per cent of geographical area was the highest in Kottayam district (48.1%) followed by Ernakulam (23.5%) and Pathanamthitta districts (20.5%) of Kerala. The present study showed that IRS P6 LISS III can be used effectively for mapping NR area at macro scale. GIS based overlay analysis indicated that 70 per cent of the area under NR in Kerala and Kanyakumari was situated in the elevation 0-100 m, above MSL 35 per cent of the NR area was situated in the 5-10 per cent slope and 20 per cent area in 3-5 per cent slope. More than 50 per cent of the NR area was in SMU 2, 3 and 4. This study shows the potential of remote sensing tools in estimating area under NR cultivation, its spatial distribution and usefulness of GIS platform in analysing, interpreting and extracting useful information such as elevation, slope and SMU with respect to NR cultivation.

Keywords: GIS, Natural rubber, Overlay analysis, Remote sensing

INTRODUCTION

Natural rubber (*Hevea brasiliensis*) is one of the world's most important economic crops and India ranks fourth in world production (IRSG, 2011) and its major share

comes from the area covering Kerala state and Kanyakumari district of Tamil Nadu. Reliable and timely estimates of crop area statistics is paramount important for Rubber Board under the Ministry of Commerce and