

A CROPPING SYSTEM FOR REDUCTION OF GESTATION PERIOD AND ENHANCED YIELD OF RUBBER TREES (*HEVEA BRASILIENSIS*)

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A cropping system with altered spatial arrangement of planting that permits extended intercropping, reduced gestation period and enhanced yield of rubber was developed for smallholdings. Rubber was planted in paired rows of 9.0 m apart, at a spacing of 5.1 m between the rows within the paired row and 3.4 m between two plants within a row. The total number of rubber plants per hectare was 406 in the cropping system whereas it was 445 in the control. Diverse annual, short-term and perennial crops (banana, pineapple, *Amorphophallus*, *Dioscorea*, *Colocasia* and arrow root, coffee and pepper) were planted sequentially in the wider inter-row spaces, selecting the intercrops judiciously based on the light availability and shade tolerance. Legume cover crop, *Pueraria phaseoloides*, was established in the narrow inter-row spaces of rubber in the intercropped area and interspaces of rubber in the control plot. Intercrops were cultivated during the entire gestation period of rubber. Fodder grass (guinea grass) and teak were planted along the boundaries. In the cropping system, the soil nutrient status was maintained and soil moisture status was significantly higher during January. Altered spatial arrangement of planting and extended intercropping reduced the gestation period of rubber and enhanced yield by 25.6 per cent during the initial years of tapping compared to control plants under normal system of planting without intercropping.

Keywords: Cropping system, Gestation period, Intercrops, Rubber yield

INTRODUCTION

Rubber tree (*Hevea brasiliensis*) which yields one of the nature's most versatile raw materials plays an important role in the economy of India and other countries where it is cultivated. Rubber plantation industry has great socio-economic relevance in India with more than one million small growers cultivating rubber and providing about 3,50,000 job opportunities in the plantation sector and almost an equal number in the industrial sector (Krishnakumar, 2003).

In India, smallholdings (less than 0.50 ha.) accounting for more than 90 per cent of the total area dominate the rubber plantation industry. In India rubber has a long gestation period of about seven years with no income from the plantation. High development cost and absence of any income from the plantation in the initial years are the major problems faced by small growers. Under the normal planting system of rubber, intercrops can be cultivated during the initial three years only and in later years, sunlight is a limiting factor. Altering the planting