

COCOA AND COFFEE AS INTERCROPS IN MATURE RUBBER PLANTATION: EFFECTS ON GROWTH AND YIELD OF RUBBER AND PHYSICO-CHEMICAL PROPERTIES OF SOIL

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The possibility of establishing perennial intercrops like cocoa and coffee in mature rubber plantation and its effects on growth and yield of rubber and physico-chemical properties of the soil were studied in a field experiment conducted in a small holding in Kerala representing the central traditional rubber growing tract in India. The treatments comprised two varieties of coffee (Robusta and C x R) and cocoa inter-planted in mature rubber (clone RRII 105) in combination with two doses of fertilizers *viz.* 100 and 50 per cent of the recommended dose for the intercrops. Coffee and cocoa were established well and started yielding by the third year. Growth and yield of rubber were not influenced by interplanting coffee and cocoa. Intercropping improved the fertility of the soil by maintaining a higher N and P status compared to monoculture field. The intercropped fields retained higher soil moisture status both at the surface and subsurface layers and recorded low soil bulk density. Yield of coffee ranged from 30-36 per cent of that of monoculture where as that of cocoa ranged from 40-56 per cent. The study suggests that cocoa is a potential intercrop for mature rubber under tapping. Conversion of existing monoculture rubber plantations to such diversified and sustainable cropping systems assumes importance in the current context of sharp decline in rubber prices and environmental challenges.

Key words: Cocoa, Coffee, Intercropping, Natural rubber, Soil nutrient status

INTRODUCTION

Intercropping and multiple cropping in the homesteads of rubber growers is an integral part of the traditional farming systems in Kerala to diversify the sources of income and improve the land use efficiency. Raising the overall productivity of land through a more effective utilization of natural and added resources is possible

through intercropping (Jessy *et al.*, 2005; Dutta *et al.*, 2011). Even though, intercropping as a means of increasing land use efficiency has successfully been applied to rubber, most of the intercropping systems are limited to immature phase of rubber and only few crops are able to sustain under mature rubber canopy (Anilkumar *et al.*, 2006). Light availability in a rubber plantation during first, second and third year is around