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EVALUATION OF A MULTISPECIES CROPPING SYSTEM DURING IMMATURITY PHASE OF RUBBER

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A cropping system experiment including diverse annual and perennial intercrops with rubber was started at the Central Experiment Station of the Rubber Research Institute of India in 1993. Rubber was planted in paired rows 9.0 m apart. The distance within the paired rows was 5.1 m. Banana, pineapple, black pepper and cocoa were planted in the wider inter-row spaces and legume ground cover *Pueraria phaseoloides* was established in the narrow inter-row spaces. Teak and fodder grass were grown along the boundaries. An increase in organic matter and available phosphorus and a decline in available potassium content in the soil was noticed after 30 months. Growth of rubber was significantly superior in the present system compared to that in monoculture. Nutrient budget of the system indicated a net gain of all the nutrients studied. Benefit-cost ratio of banana, pineapple and fodder grass were 2.58, 2.26 and 2.07 respectively, indicating the economic feasibility of growing banana and pineapple as intercrops and fodder grass along the boundaries during the initial three years. An evaluation of the system also indicated sustainability in terms of soil fertility maintenance.

Key words : Benefit-cost ratio, Cropping system, Rubber, Soil nutrient status

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INTRODUCTION

Multiple cropping with two or more species is a practice in the warm humid tropics and subtropics where climatic factors are congenial for year round cropping. Intercropping an array of crops with varying growth habits within a cropping system results in increased production per unit area and better utilization of available resources. Rubber, which has a long immaturity period, provides ample scope for cultivation of short duration crops in the interspaces. Banana, pineapple, ginger, turmeric and tubercrops are usually grown as intercrops in immature rubber plantations during the first three years. Perennial crops can be included in the system by altering the normal crop geometry of rubber. The present investigation was taken up to evaluate soil fertility maintenance and economic feasibility of a multispecies rubber based cropping system.

MATERIALS AND METHODS

The experiment was started in 1993 at the Central Experiment Station of the Rubber Research Institute of India at Chethackal, in Central Kerala, (9°22'N and