

LEAF LITTER DECOMPOSITION AND NUTRIENT RELEASE IN A FIFTEEN YEAR OLD RUBBER PLANTATION

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Leaf litter addition, decomposition and nutrient release therefrom in a fifteen year old rubber plantation were studied. The study revealed that 4824 kg/ha of leaf litter was added and 92 per cent of which decomposed in a period of six months releasing 88 kg N, 2.4 kg P, 45 kg K, 60 kg Ca, 16 kg Mg, 1.5 kg Mn and 0.25 kg Zn.

Key words : Litter decomposition, Nutrient addition.

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INTRODUCTION

Litter production and its decomposition are important aspects of nutrient cycling in natural forests and plantations since this acts as one of the input-output systems for nutrients. The forest / plantation floor is built up mainly by addition of litter. Decomposition is the primary mechanism by which the nutrients in litter are returned to soil. The amount, chemical composition and rate of decomposition of litter regulate the energy flow and nutrient cycling of a forest ecosystem (Ovington, 1962; Newbould, 1967). The rate of decomposition depends upon the climatic factors, soil organisms and chemical composition of the litter (Williams and Gray, 1974).

Rubber tree (*Hevea brasiliensis*), a native of the Amazon river basin has a defoliation cycle by which large quantities of litter is added to the soil. Among the different litter components, decomposition of leaf litter accounts for the major portion of nutrients added. This study was taken up to quantify the leaf litter production in a rubber plantation and to understand the pattern of nutrient addition through decomposition.

MATERIALS AND METHODS

The study was conducted during 1995-1996 at Central Experimental Station of the

Rubber Research Institute of India at Chethackal (latitude 9° 22' N, longitude 76° 50' E and at an altitude of 80 m) in a 15 year old rubber plantation of clone RRH 105. The rainfall received during 1996 was 2979 mm. Mean maximum temperature varied from 29.1 to 36.4°C and minimum temperature from 20.2 to 24.1°C (Fig.1).

Twelve litter traps of size 1m x 1m were set up in the plantation floor at random in an area of one hectare during December 1995 before the commencement of leaf fall. The leaves fallen during wintering were allowed to deposit in the litter traps. When wintering was over during February 1996, the litter traps were covered with plastic nets to

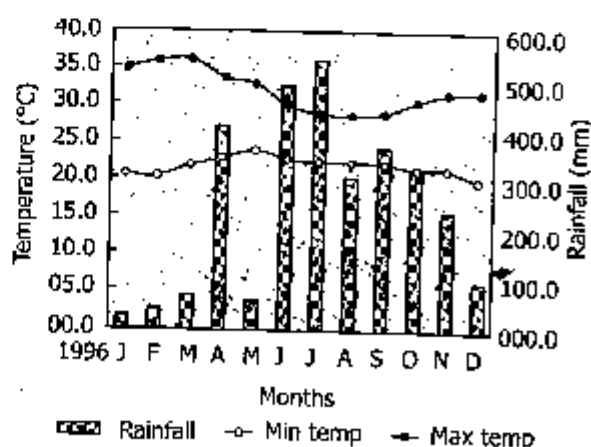


Fig. 1. Mean maximum and minimum temperature and rainfall at CES, Chethackal during 1996