

INFLUENCE OF SILT PITS ON CONSERVATION OF SOIL, NUTRIENTS AND MOISTURE IN A MATURE RUBBER PLANTATION

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The use of silt pits (conservation pits) to conserve soil and water is a common practice in rubber plantations. The results of a field experiment to evaluate the effect of such pits on soil and moisture conservation and growth and yield of rubber are discussed. The experimental area was well drained with an average slope of 17-22 %. The treatments were conservation pits taken at the rate of 100, 150, 200 and 250 per ha with a no pit control. It was found that about 5-13 t/ha/year of soil was conserved and thus prevented from being eroded when the number of silt pits was increased from 100 to 250 per ha. The quantity of nutrients conserved ranged from 13-34, 7-18 and 9-25 kg/ha of N, P and K respectively. The data on quantity of soil deposited in the observation pits taken at the lower most part of the field indicated that when the number of pits was increased, the quantity of soil lost was considerably reduced. The plant response in terms of growth and yield for a period of 18 months did not indicate any significant difference between the treatments. The effect of silt pits on soil and leaf nutrient status is also discussed.

Key words: Conservation, *Hevea*, Nutrients, Rubber, Silt pit, Soil conservation, Water

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INTRODUCTION

In India, rubber (*Hevea brasiliensis*) is largely grown in the high rainfall areas of the south-western region. The rainfall and the undulating topography of the rubber growing areas make the soil vulnerable to erosion. Hence, conserving the soil from erosion and increasing its moisture retention becomes inevitable for sustained soil productivity and crop performance. Improper soil management is the main cause of erosion in most of the agricultural lands. Contour terracing and silt pitting are commonly practised in rubber plantations to control erosion and to conserve soil and water. Opening of silt pits is a useful method for conservation of soil and water especially in mature rubber (Haridas *et al.*, 1987). However, the effect of these conservation measures on growth and yield of rubber as well as soil and moisture conservation is rarely investigated using statistically designed field trials. Therefore the effect of silt pits

on soil, moisture and nutrient conservation and on the growth and yield of rubber were assessed in a field experiment.

EXPERIMENTAL

A field experiment was laid out during 1998 in a 20 ha rubber plantation of clone PB 311 aged 12 years at the Manickal division of TR&T Estate, Mundakayam, Kottayam District, Kerala. The soil of the experimental area was sandy clay loam. Its organic carbon content (1.5%) and available P content (1.17 mg/100g) were medium, while available K (4.21 mg/100g) was low. The field slope ranged from 17 - 22 %. The total rainfall received during the experimental period (January 1998 - March 1999) was 466.8 cm.

Soil management

A field experiment in randomised complete block design with five treatments and four replications was laid out. The treat-