CONSERVATION PITS INFLUENCE GROWTH, YIELD AND SOIL PROPERTIES OF RUBBER (*HEVEA BRASILENSIS*) IN THE UNDULATING LANDS OF TRIPURA

Bhaskar Datta, T.K. Pal, B.K. Mehra and Debasis Mandal

Regional Research Station, Rubber Research Institute of India, Kunjaban-799 006, Agartala, India

Received: 23 January 2024 Accepted: 06 May 2024

Datta, B., Pal, T.K., Mehra, B.K. and Mandal, D. (2024). Conservation pits influence growth, yield and soil properties of rubber (*Hevea brasiliensis*) in the undulating lands of Tripura. *Rubber Science*, **37**(1): 70-77.

Effect of conservation pits on growth and yield of natural rubber (*Hevea brasiliensis*) was examined for five consecutive years (2017-22) in the slopy lands of Tripura. Influence of silt pits on soil properties was also studied. The experiment was carried out in a block design with 150 plants per block with 200 pits per ha. Pits were set in between row of plants in a staggered manner. In an adjacent plot, a control block (without pits) was also maintained for comparison. Trunk girth of the plants was measured periodically and annual yield data (kg ha^{-1} yr^{-1}) of the plants were recorded. The soils that were deposited in pits were excavated; their chemical properties were determined and compared with that of bulk soil. Results showed a positive but non-significant improvement in mean trunk girth of the plants during the study period. However, a positive and significant increase in mean yield from second year of recording was observed due to construction of conservation pits. It was also observed that about 3.98 to 5.42 mt soil ha^{-1} yr^{-1} was conserved in the pits, which prevented the loss through surface run off from the slopy lands. The study revealed that a considerable amount of nutrients was conserved, ranging from 21.6 to 31.5, 3.1 to 4.5 and 30.6 to 35.5 kg N, P and K ha^{-1} yr^{-1} respectively. Similarly, an amount of 29.14 kg organic carbon and 216.2 kg clay ha^{-1} could be protected per annum from these slopy lands. Intercepting the surface water run-off into the pits could raise the soil moisture, particularly in the subsurface layer, which could prolong the moisture availability to plants for a longer period resulting in an increased latex flow from the plants in the block with conservation pits.

Keywords: Conservation pits, Growth, Rubber tree, Slopy lands, Soil properties, Yield

INTRODUCTION

Traditionally nestled in the southern realms of India, particularly in Kerala, the cultivation of natural rubber (*Hevea brasiliensis*) has now found its new home for the past few decades in the undulating terrains of Tripura's residual hills and uplands. The soils in this region are relatively young, poor in nutrient status and were once subjected to shifting cultivation. As a result, organic matter content of these soils is found low and soils are prone to erosion (Krishnakumar *et al*., 1990). Surface run-off during the monsoon season erodes precious top soil and strips away vital nutrients essential for robust plant growth thereby

Correspondence: Bhaskar Datta (Email: bhaskardatta@rubberboard.org.in)