

## RESPONSE OF RUBBER (*HEVEA BRASILIENSIS*) TO NPK FERTILIZERS IN THE LOWER BRAHMAPUTRA VALLEY ZONE OF ASSAM

R. P. Singh, D. Mandal\*, Mercykutty Joseph\*\* and A. C. Sharma\*

Rubber Research Institute of India, Regional Research Station, Tura-794 001, Meghalaya, India

\* Rubber Research Institute of India, Regional Research Station, Agartala-799 006, Tripura, India

\*\* Rubber Research Institute of India, Kottayam-686 009, Kerala, India

Singh, R. P., Mandal, D., Joseph, M. and Sharma, A. C. (2010). Response of rubber (*Hevea brasiliensis*) to NPK fertilizers in the Lower Brahmaputra Valley Zone of Assam. *Natural Rubber Research*, 23(1&2): 28-36.

A field experiment was conducted to study the response of rubber to NPK fertilizers in the Lower Brahmaputra Valley Zone (LBVZ) of Assam. The treatments consisted of four levels of N and three levels each of P and K in factorial randomized block design. Nitrogen and K significantly influenced the girth and girth increment. Optimum level of N, P and K for achieving good growth in immature phase and improving the soil fertility was found to be 50:20:40 kg/ha/year. The interactions of N, P and K were non significant. Nitrogen, P and K application significantly improved the rubber yield. Positive linear response to N, P and K on rubber yield was observed. The highest yield was recorded by 60:40:40kg NPK/ha/year. Continuous application of N, P and K fertilizers improved the fertility status of the soil.

**Keywords:** Dry rubber yield, Fertilizer response, *Hevea brasiliensis*, North East India, Soil fertility

### INTRODUCTION

In India, the traditional rubber growing tract extends from Kanayakumari district in Tamil Nadu to Dakshin Kannada district in Karnataka. Rubber cultivation is now extended to north-eastern part of India where the soil is highly depleted and deficient in nutrients due to the shifting cultivation practised over several years. The situation is further aggravated by the routine practice of cutting and removal of thatch grass (Laskar *et al.*, 1983). Leaching loss of essential cations due to high rainfall also results in low nutrient status of the soil (Talukdar, 1997). The soils of Assam are reported to be poor in nutrient status (Krishankumar and Potty, 1989; Singh *et al.*, 1999, 2000, 2001, 2002 and 2005).

Improvement in growth and reduction in the gestation period of rubber grown in poor and marginal soils through the application of chemical fertilizers has been reported by many workers (Dijkman 1951; Owen *et al.*, 1957; Punmoose *et al.*, 1975). Proper soil and nutrient management is highly essential for achieving optimum growth and yield, especially in marginal and depleted soils. Current practice is to follow the general fertilizer recommendation of 35: 35: 35 kg N, P and K/ha/year for mature rubber. Studies on the response of rubber to fertilizer application in the soils of Assam are few. There was a felt need to study the response of rubber to chemical fertilizers under the agroclimatic conditions of Assam (or revising /modifying the general fertilizer