

## EFFECT OF DIFFERENT LEVELS OF N, P AND K ON GROWTH OF IMMATURE RUBBER IN LOWER BRAHMAPUTRA VALLEY OF ASSAM

In India, cultivation of rubber (*Hevea brasiliensis*) has been extended to non-traditional areas in order to bridge the gap between production and consumption and the North-Eastern states are the most potential areas where rubber can be grown successfully. Rubber trees face different stress factors, like low temperature during cold season and high wind velocity together with hail-storm when cultivated in this belt (Sethuraj *et al.*, 1989). In addition, the shifting cultivation and removal of thatch grass lead to nutrient depletion of soils (Laskar *et al.*, 1983). Essential cations such as K, Mg and Ca also get leached out due to high rainfall (Talukdar, 1997).

Application of higher doses of NPK during juvenile period helps in reducing the gestation period of rubber trees (Dijkman, 1951). Bolton (1960) observed in a long-term fertilizer experiment on a sandy latosol in Malaysia that fertilizer application resulted in increased growth and yield. Akhrust and Owen (1950) and Owen *et al.* (1957) reported that the major nutrients, *viz.* N, P and K influenced favourably the growth during the immature phase and a marked response was reported for soluble phosphatic fertilizers. The objective of the present experiment was to ascertain the optimum requirements of NPK for young *Hevea*, grown under the agro-climatic condition of lower Brahmaputra Valley of Assam, India.

A field experiment was conducted at Nayakgaon, Kokrajhar, Assam, 240 km away from Guwahati. The area is situated at an

elevation of 75 m above msl and receives about 2100 mm rainfall annually. The terrain is plain with clay loam textured soil. Nine-month-old polybag plants of clone RRII 105 were planted in 1987. The trial was laid out in factorial randomised block design with thirty-six treatments and two replications, with a gross plot size thirty-six and a net plot of sixteen plants. The treatments consisted of four levels of nitrogen (0, 20, 40 and 60 kg N/ha), three levels of phosphorus (0, 20 and 40 kg P<sub>2</sub>O<sub>5</sub>/ha) and three levels of potassium (0, 20 and 40 kg K<sub>2</sub>O/ha). Fertilizers were applied twice in an year, during April/May (pre-monsoon) and September (post-monsoon). Nitrogen was supplied as urea and P as water soluble P (super phosphate) during the first two years and as water insoluble P (Mussoorie rockphosphate) in the subsequent years and K as muriate of potash. Routine cultural operations were carried out following the recommendations of the Rubber Research Institute of India. Soil samples were collected from the experimental area prior to the commencement of the experiment (Table 1) and also from each plot at the end of the fifth year and analysed for organic carbon, available P, K, Ca, Mg and pH following the standard analytical procedures (Karthikakuttyamma, 1989). Girth was recorded at a height of 150 cm from the bud union periodically.

The data on growth (girth) during the initial five years are presented in Table 2. There was increase in the growth of plants