

EFFECT OF POTASSIUM AND SODIUM ON PERFORMANCE OF YOUNG *HEVEA BRASILIENSIS*

Elsie S. George, B. Sudhakumari and K.I. Punnoose

George, E.S., Sudhakumari, B. and Punnoose, K.I. (2000). Effect of potassium and sodium on performance of young *Hevea brasiliensis*. *Indian Journal of Natural Rubber Research*, 13 (1&2) : 92-97.

A pot culture experiment was conducted to study the effect of sodium chloride (NaCl) on the growth of young rubber plants grown in a laterite soil. The treatments comprised substitution of K_2O (applied as KCl) by Na_2O (applied as NaCl) to the extent of zero, 25, 50, 75 and 100 per cent on clone RRII 105. The treatment which received 100 per cent of the recommended dose as K_2O and those with 25 and 50 per cent substitution of K_2O by Na_2O appeared superior to other treatments in total dry matter production and uptake of K. The uptake of N, P, Ca and Mg were not influenced by the substitution. The available K and Na content in the soil increased with increased application of these nutrients while pH and EC remained unaffected.

Key words : Dry matter production, *Hevea brasiliensis*, Nutrient uptake, Potassium chloride, Sodium chloride.

Elsie S. George (for correspondence), B. Sudhakumari and K.I. Punnoose, Rubber Research Institute of India, Kottayam-686 009, India (Email : rrii@vsnl.com).

INTRODUCTION

The widely used and cheapest potash fertilizer for rubber plantations is potassium chloride (muriate of potash) and unit cost of K_2O is Rs.6.20. The question of whether sodium (Na^+) can replace potassium (K^+) in physiological processes in plants is of practical importance in relation to fertilizer usage since the source of Na, common salt, is much cheaper than muriate of potash. Marschner (1971) reported that in less specific processes such as raising cell turgour some replacement is possible and the extent to which substitution can occur, depends much on the uptake potential for Na. Khanna and Balaguru (1981a, b) reported that when supplied with

both K and Na, majority of plants show selectivity for K and the degree of selectivity differs widely between species. The growth of cotton plants has been improved through Na application when there was a deficiency of K (Joham, 1955). Smith (1969) reported that Na could replace K in coconut trees. Substitution of K_2O by Na_2O to the extent of 50 per cent or even 75 per cent did not reduce the yield of coconut grown in a laterite soil (Mathew *et al.*, 1984).

MATERIALS AND METHODS

A pot culture study was conducted in completely randomised design using budded stumps of rubber as planting material. The pots were filled with surface