POTASSIUM AND SILICON HELP YOUNG RUBBER PLANTS TIDE OVER TRANSIENT DROUGHT

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A glass house experiment was conducted with polybag plants of clone RRII 105 to study the effect of potassium and silicon in alleviating the adverse effects of soil moisture stress in young rubber plants. The experiment consisted of two treatments, *viz*, irrigated and unirrigated. Under each treatment, there were four sub-treatments *viz*, control (standard practice), silicon (Si), potassium (K) and silicon + potassium (Si+K). Silicon was supplied as rice husk ash, and incorporated into the soil, two weeks after planting. In treatments with potassium, 2.5 times the recommended dose of K was added so that N:K was maintained as 1:1. Observations on leaf water potential and chlorophyll content index indicated positive effect of silicon and higher dose of potassium in overcoming soil moisture stress.

Keywords: *Hevea brasiliensis*, Moisture stress, Potassium, Silicon.

Variations in annual monsoon pattern and increasing frequency of dry spells during monsoon season adversely affect establishment and initial growth of rubber plants even in traditional rubber growing regions. Increasing severity of drought during summer season also augments the casualty in the field. Scarcity of water for irrigation and manpower limit the large-scale adoption of irrigation in young rubber plantations, though life saving irrigation for young plants is increasingly adopted in recent years.

Status of mineral nutrients in plants plays a critical role in increasing plant resistance to drought stress (Marschner, 1995). It is known that potassium (K) has a specific role in alleviating the adverse effects of soil water stress, by decreasing the loss of water from the plant by reducing transpiration (Mengel and Kirkby, 1980). K^+ maintains the osmotic potential and turgor of the guard cells and regulates the stomatal functioning under water stress conditions (Lindhaur, 1989). Potassium enhances photosynthetic rate and plant growth under stress condition (Marschner, 1995). The compensating effects of high levels of added K in overcoming moisture stress effects in young rubber plants was reported by Samarappuli *et al.* (1993).

Silicon (Si) also plays an important role in enhancing tolerance to environmental stresses like drought and cold in plants (Lux *et al* 2002; Ma and Yamaji, 1999). Silicon improved water use efficiency and

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