EFFECT OF 1) ALUMINIUM AND 2) POTASSIUM ON GROWTH AND COMPOSITION OF MINERAL NUTRIENTS (N,P & Mg) OF YOUNG TEA (Camellia sinensis L.)

by

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A research report submitted in partial fulfilment of the requirements of a advanced course (500 series) in

SOIL SCIENCE

for

The degree of Bachelor of Science in Agriculture - 1988

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In three separate experiments the effect of (1) Aluminium and (2) Potassium on the uptake of Nitrogen, Magnesium and Phosphate by young tea plants (Camellia sinensis L.) of two clones (TRI 2025 and DN) was studied. Different concentration of aluminium at (1) low (0-50 ppm) and (2) high (100-200 ppm) levels at constant level of Magnesium, Potassium and Nitrogen on growth and nutrient composition of the plants comprised two of the experiments. In the third experiment, different levels of potassium (0-150 ppm) at constant level of Magnesium and Nitrogen on growth and nutrient composition was tested. The experiments were conducted for a period of four months at the end of which the plants were assesed and growth parameters measured. Nutrient content of (N,P,K,Mg & Al) of various tissues was also estimated.

The growth assessment data revealed that, at the end of four months there were significant differences between the aluminium and potassium treatments. When the aluminium was increased from 0 to 50 ppm there was a reduction in growth with respect to total fresh weight, total dry weight, dry weight of leaves, dry weight of roots, leaf area, and height for clone TRI 2025. Such differences were not evident in clone DN. In the second experiment where increased aluminium was tested, as the aluminium was increased from 100 to 200 ppm there was significant reduction in the total fresh weight and dry weight for clone TRI 2025. With increasing concentration of aluminium in the applied nutrient solution there was a steady reduction in the phosphorus and magnesium content of leaves, stem and roots. This was more pronounced at higher concentration (100-200 ppm Al). However, at low concentration (0-50 ppm) though there was an appreciable reduction of phosphorus in all the tissues tested magnesium content showed a reduction only in the leaves and roots. As the aluminium supply was increased the tissue aluminium also increased in most of the plant tissues.

In the third experiment where the effect of potassium was tested on growth and concentration of nutrients it was observed that increased application of potassium reduced growth significantly with respect to height, total length of side shoots, leaf area in clone 2025. Though not statistically significant, there was a similar trend in clone DN.

Increased application of potassium showed a marked increase in the potassium content of all the tissues but decreased magnesium content significantly. There was also a reduction in the uptake of nitrogen as the potassium was increased. The above findings are true for both clones TRI 2025 and DN.

The results are being discussed in relation to the fertilizer recommendation for tea in Sri Lanka.