

**THE EFFECT OF MICRO- AND MACRONUTRIENTS ON
IRON TRANSLOCATION AND TRANSFORMATION WITHIN
THE RICE PLANT (*Oryza sativa* L.)**

V. Manoharan

Junior Research Associate

The effect of micro- and macronutrients on iron absorption by the rice plant (*Oryza sativa* L.) and its translocation and transformation within the plant was studied in sand culture under greenhouse conditions.

Different levels of potassium, phosphorus, calcium, magnesium, manganese and zinc were applied in combination with 100 ppm of iron as iron citrate. Plants were removed 60 days after germination for the analysis of total iron, 'active' iron, micro- and macronutrient elements, amino acids, and carboxylic acids.

The 'active' iron fractions of the shoot as extracted by 1N HCl showed a highly significant linear relationship ($r^2 = 0.81$) between the ratios of total phosphorus to total iron. But the ratios of total potassium to total calcium did not have any relationship to the 'active' iron fractions of the shoot. A higher Mn application significantly reduces the total iron content in the shoot over control. Higher levels of Zn and P applications significantly reduce the 'active' iron content of the shoot. A combination of a balanced nutrient application and the selection of a plant species that tolerates high iron levels is a potential solution to reduce iron intoxication.