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Response to micronutrients on nutritional status in leaf of banana (*Musa paradisiaca* L.) cv. GRAND NAIN

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ABSTRACT

An experiment was carried out the study of effect of micronutrient on leaf nutrition of banana cv. Grand Nain at Regional Horticultural Research Station, Navsari Agricultural University Navsari (Gujarat) during the year 2005. The experiment was laid out in a Randomized Block Design with nine treatment combinations involving two levels of chelated and non chelated (iron 25 and 50 gm and zinc 20 and 40 gm per plant) micro elements with common application of $MnSO_4$, $CuSO_4$ and borax (20, 5 and 10 gm per plant, respectively) expect control. The higher nitrogen and iron content in leaves were recorded under the plants treated with higher levels of FeEDTA with common application of micro-elements. However, the higher percentage of phosphorus, zinc, manganese and copper content in leaves were recorded in the treatments of higher ZnEDTA with common application of $MnSO_4$, $CuSO_4$ and Borax.

Key words : Banana, Chelated, Micronutrients, EDTA, Nutrition, Grand nain

Banana (*Musa paradisiaca* L.) is considered to be the apple of paradise as it is the most important fruit crop of India and constitutes an important horticultural asset of the country, because of its taste, manifold utility and nutritive value, banana has been acknowledge as an excellent fruit. South Gujarat is the pioneer banana producing state and Grand Nain being leading commercial cultivar in Gujarat and Maharastra also. There is little information available on the effect of micronutrients on growth and flowering of banana. Banana appear to have the maximum capability to recover by proper application of fertilizers. Ghanta and Mitra (1993) have reported favorable response of banana to micronutrients application.

Micronutrient is required by plant in very small quantities, yet they are very effective in regulating plant growth as they form a plant enzyme system and thus regulate plant life, micronutrient like Cu, Zn, Mo, B, and Mn are necessary for healthy growth of banana. Deficiencies of Zn, Cu, Fe, and Mn affected the growth and production of banana. The present experiment was carried out, to study the response of Zine, Ferrus, Manganese, Copper and Boron on the nutritional status of leaf of banana cv. GRAND NAIN.

MATERIALS AND METHODS

The experiment was conducted in Randomized Block Design with three replications and nine treatments at Regional Horticultural Research Station, Navsari Agricultural University, Navsari (GUJARAT) in the year 2005. The soil of experimental field was clayey with pH 7.3 and EC (dsm^{-1}) 0.94. Healthy plants multiplied by tissue culture were planted at spacing of 2.1x1.5m.The10 kg FYM was applied in each pit before planting. Recommended dose of fertilizer (RDF) was applied at the rate of 200g nitrogen, 90g phosphorus and 200g potassium per plant. The 1/3 N and K and whole amount of P were applied at the three months after planting. Remaining N and K were applied in two splits at four and five months after planting. The various treatments were Control (RDF)-T_1, RDF + $FeSO_4$ 25g-T_2, RDH + $FeSO_4$ 50g-T_3, RDH + FeEDTA 25g- T_4, RDF + FeEDTA 50g-T_5, RDF + $ZnSO_4$ 20g-T_6, RDF + $ZnSO_4$ 40g-T_7, RDF + ZnEDTA 20g- T_8, RDF + ZnEDTA 40g- T_9. The common application of $MnSO_4$ 20g, $CuSO_4$ 5g and borax 10g were given in all the treatments except control. The treatments applied in two equal splits, three and four months after planting. All plant protection and intercultural operations were under taken when ever necessary as recommendation. The data on growth and flowering were recorded of the representative plants at random. For getting the idea of nutrient status of banana crop, the leaf samples were taken from four plant of net plot. The leaf samples of standard size, 5 cm^2 were taken at the time of emergence of inflorescence from the centre of the third leaf near mid-rib but mid-rib was omitted (Hewitt, 1955). Collected leaf samples were washed in tap water followed by distilled water and double distilled water and shade dried and then the samples were dried in an oven at 65°C for 48 hours and samples were grinded in stainless steel jar grinder and passed through a 40 mesh sieve. All relevant procedures and care were taken as described by Chapman (1964) for collection, cleaning, drying,