

Effect of micronutrients on yield and fruit quality of Banana (*Musa paradisiaca* L.) cv. BASRAI under pair row planting method

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ABSTRACT

A field experiment on the effect of micronutrients on yield and fruit quality of banana cv. BASRAI was carried out at Fruit Research Station, Navsari Agricultural University, Gandevi. Six treatment combinations of foliar spray and soil application of micronutrients viz., Fe and Zn with control were tried. The foliar application of $ZnSO_4$ (0.5%) + $FeSO_4$ (0.5%) was found to be best treatment for bunch weight (23.85 kg), bunch length (93.50 cm), bunch girth (114 cm), number of hands per bunch (11.70) and yield (149.078 t/ha). Foliar as well as soil application of $ZnSO_4$ (0.5%) + $FeSO_4$ (0.5%) treatments effectively increased the ascorbic acid content (25 mg/100 g) and total soluble solids (22.0325) in banana fruits. Higher cost benefit ratio (1:1.94) was obtained in foliar spray of $ZnSO_4$ (0.5%) + $FeSO_4$ (0.5%) treated plots.

Key words : Banana, Pair row method, Micronutrients, Yield, Fruit quality, Economics

Banana (*Musa paradisiaca* L.) belongs to family Musaceae, is the cheapest, plentiful and most nourishing fruit crop of the world. It is grown in more than 130 countries with total production of 97 million tones of fruits. India is the largest producer of banana in the world (23.20 MT) from an area of 6.46 lakh hectare. In Gujarat state the area under banana crop is 57,700 ha with an annual production of 31,57,700 tonnes, with the productivity of 54.8 t/ha. It is a premier fruit having great socio-economic significance in India. Owing to its shallow roots, banana is a moisture and nutrient loving plant so judicious doses of nutrients has to be applied at the proper stage to improve its productivity and quality of fruits. The major nutrients namely nitrogen, phosphorus and potassium as well as the micronutrients are essential for normal growth and fruiting of plants. Information regarding the effect of micronutrients on yield and quality of banana is meager. The present experiment was undertaken to study the effect of Zn and Fe application, alone or in their combinations on yield and quality of banana cv. BASRAI.

MATERIALS AND METHODS

A field experiment was conducted at Fruit Research Station, Navsari Agricultural University, Gandevi. The soil of experiment site was clayey, Gadat series which include deep to very deep, well drained clayey soil, having pH 7.1, EC 0.05 ds/m, available nitrogen 188 kg/ha, available phosphorus 109.01 kg/ha, available potash 244 kg/ha, available Fe 35.80 ppm and available Zn 1.36 ppm. The climate is typical monsoonal type with three well defined seasons viz., monsoon, winter and summer, characterized

by fairly warm humid monsoon, moderately cold winter and fairly hot summer. The rainfall received during crop growth was 3228 mm.

The treatments examined were (1) T_1 : Zn @ 0.5% ($ZnSO_4$) foliar spray at 3rd, 5th and 7th month after planting, (2) T_2 : Fe @ 0.5% ($FeSO_4$) foliar spray at 3rd, 5th and 7th month after planting, (3) T_3 : Zn @ 0.5% ($ZnSO_4$) + Fe @ 0.5% ($FeSO_4$) foliar spray at 3rd, 5th and 7th month after planting, (4) T_4 : 30 kg $ZnSO_4$ /ha soil application at 3rd months after planting, (5) T_5 : 30 kg $FeSO_4$ /ha soil application at 3rd months after planting, (6) T_6 : 30 kg $ZnSO_4$ /ha + 30 kg $FeSO_4$ /ha soil application at 3rd months after planting and (7) T_7 : control (no micronutrients application). The treatments were replicated four times and arranged in randomized block design. The planting material of "Basrai" banana (group Musa AAA, Cavendish subgroup) consisted of healthy sword suckers were planted during July at 1.0 m x 1.2 m x 2.0 m (pair row) spacing. The plot size was 6.4 m x 5.0 m (20 plants / plot). A uniform dose of N, P and K (200 g N : 90 g P : 200 g K/plant) was applied. Farm yard manure 10 kg per plant was given as basal in the pits dug prior to planting. The entire dose of phosphorus was applied at one month after planting while nitrogen and potash were applied in three equal splits 3rd, 4th and 5th month planting. Six plants were selected from each plot for recording observation on yield attributing characters. For recording quality parameters of fruits, fully ripped third hand fingers from the top of bunch were used. Economics was also worked out for each treatment considering prevailing market price. The data collected were subjected to statistical analysis using standard method of analysis of variance