



Research Paper

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Response of summer okra (cv. PHULE UTKARSHA) to iron, zinc and boron in inceptisol

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ABSTRACT : A field experiment was conducted to study the response of summer okra (cv. Phule Utkarsha) to iron, zinc and boron in Inceptisol at Regional Fruit Research Station, Ganeshkhind, Pune (M.S.) during 2007-08. The objective of experiment was to study the effect of iron, zinc and boron on growth, yield, quality, nutrient uptake of okra and soil properties after harvest of okra. There were twelve treatments viz., water spray, foliar spray FeSO₄ (0.5 %), foliar spray ZnSO₄ (0.5 %), foliar spray boric acid (0.2 %), foliar spray FeSO₄ + ZnSO₄ (0.5 % each), foliar spray FeSO₄ (0.5 %) + boric acid (0.2 %), foliar spray ZnSO₄ (0.5 %) + boric acid (0.2 %), foliar spray FeSO₄ + ZnSO₄ (0.5 % each) + boric acid (0.2%), soil application of FeSO₄ @ 20 kg ha⁻¹, soil application of ZnSO₄ @ 20 kg ha⁻¹, soil application of FeSO₄ + ZnSO₄ @ 20 kg ha⁻¹ each and soil application of FeSO₄ + ZnSO₄ @ 20 kg ha⁻¹ each + borax @ 5 kg ha⁻¹. The experiment was laid in Randomized Block Design with three replications. The foliar sprays of micronutrients were done at 30 days and 45 days after sowing of okra. The soil application of micronutrients were done at the time of sowing. The results of experiment indicated that the soil application of FeSO₄ + ZnSO₄ @ 20 kg ha⁻¹ each + borax @ 5 kg ha⁻¹ registered significantly higher plant height (155.64cm), higher number of nodes per plant (24.96), higher number of days to 50 % flowering (43.67). The higher average fruit diameter (1.60 cm), higher fruit length (11.30 cm) and average fruit weight (11.67 g) were found in T₁₁. The micronutrient application to okra helped to improve yield parameters. The soil application of FeSO₄ + ZnSO₄ @ 20 kg ha⁻¹ each + borax @ 5 kg ha⁻¹ yielded significantly higher yield (205.8 q ha⁻¹) and was at par with foliar spray FeSO₄ + ZnSO₄ (0.5 % each) + boric acid (0.2%) (196.4 q ha⁻¹), soil application of FeSO₄ + ZnSO₄ @ 20 kg ha⁻¹ each (191.2 q ha⁻¹) and foliar spray FeSO₄ + ZnSO₄ (0.5 % each) (191.2 q ha⁻¹). In general the combined application of FeSO₄ + ZnSO₄ @ 20 kg ha⁻¹ each + borax @ 5 kg ha⁻¹ as soil application and foliar sprays of FeSO₄ (0.5 %) + ZnSO₄ (0.5 %) + boric acid (0.2%), both treatments were found significantly effective in increasing the yield of okra and maintained soil properties. The uptake of nitrogen was significantly higher due to soil application of FeSO₄ + ZnSO₄ + borax (48.03 kg ha⁻¹) and at par with foliar spray FeSO₄ + ZnSO₄ + boric acid (45.84 kg ha⁻¹) and soil application of FeSO₄ + ZnSO₄ @ 20 kg ha⁻¹ each (45.61 kg ha⁻¹). The similar treatment showed significantly higher uptake of phosphorus and potassium. The application of FeSO₄, ZnSO₄ and borax either alone or in combination helped to increase the uptake of iron, zinc, boron, manganese and copper by okra.

KEY WORDS : Okra, Micronutrients, Yield, Nutrient uptake, Soil properties

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