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Influence of Zinc and Iron Fertilization on Growth and Yields of Pearl millet and Mustard under Salt Affected Soils

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Zinc and iron (Fe) deficiency mostly found in salt affected soils in arid and semi-arid tracts of the India. The management of zinc and iron nutrition is most important concern in such potential deficient soils. For this reason, the field experiment was conducted during 2013-17 under pearl millet-mustard cropping system to evaluate response of rate and methods of zinc and iron fertilization to mustard crop. A field experiment was conducted, consisting of 12 treatments laid out in randomized block design. The 12 treatments of Zn and Fe *i.e.* T₁- Control, T₂- 5 kg Zn ha⁻¹, T₃- 6.25 kg Zn ha⁻¹, T₄- 7.5 kg Zn ha⁻¹, T₅- 7.5 kg Fe ha⁻¹, T₆- 10 kg Fe ha⁻¹, T₇- 12.5 kg Fe ha⁻¹, T₈- 5 kg Zn+10 kg Fe ha⁻¹, T₉- 5 kg Zn+10 kg Fe + 10 t FYM ha⁻¹, T₁₀- Foliar sprays of 0.5% ZnSO₄ (twice), T₁₁- Foliar sprays of 1% FeSO₄ (twice) and T₁₂- Combined foliar sprays (0.5% ZnSO₄ + 1% FeSO₄; twice). The results of experiment showed that, application of FYM 10 t ha⁻¹ along with 5 kg Zn+10 kg Fe significantly ($p=0.05$) improved the yield parameters of pearl millet and mustard followed by 5 kg ha⁻¹ Zn and 10 kg ha⁻¹ Fe as soil application. The results also indicated that combined soil application of 5 kg Zn+10 kg Fe + 10 t FYM increased the pearl millet grain yield (36.6 q ha⁻¹) and mustard seed yield (22.7 q ha⁻¹) by 57.1% and 42.8% higher over control, however, yield improvement was 35.6 and 20.7% due to application of 5 kg Zn + 10 kg Fe without FYM, respectively, in pearl millet and mustard over control. Ferrous-iron content in both crops proved to be a better index of Fe nutrition status compared to total plant Fe and DTPA- extractable soil Fe under salt affected soils. Salt affected soils are having vast potential to produce a significant amount of food grain by applying optimum dose of Zn, Fe and FYM in pearl millet and mustard.