Effect of foliar application of different Fe levels and sources on growth and concentration of some nutrients in sorghum

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Abstract

One of the fast responding methods of plants to fertilizer application is foliar application, which saves fertilizer consumption too. Foliar application of micronutrients is a useful method, especially when roots are unable to absorb necessary elements from soil. The amount of available iron (Fe) in calcareous soils, with high pH, is low for sensitive plants, such as sorghum, to Fe deficiency. To compare the effect of foliar application of different Fe sources on growth traits, concentration and uptake of nutrients in sorghum, a greenhouse experiment was conducted as a completely randomized design with three replications. Treatments consisted of three levels of Fe (0, 90 and 180 mg Fe/L) from three sources of Fe (Fe nano-chelate, Fe-EDDHA and $FeSO_4.7H_2O$). Results showed that application of all three sources of Fe increased shoot and root dry matter yield, plant height, leaf chlorophyll content, shoot Fe concentration and uptake as compared to control treatment. Foliar application of Fe reduced concentrations of P and Mn in shoot, but had no significant effect on root P, Mn and Fe concentrations. Concentration of Zn and Cu in shoot and root of sorghum was not affected by level of Fe application. Based on the results of this experiment, foliar application of $FeSO_4.7H_2O$ compared to Fe-EDDHA and Fe nano-chelate can increase growth and improve some characteristics of sorghum plants under greenhouse conditions. This result is economically affordable as well.

Keywords: $FeSO_4.7H_2O$, Iron nano-chelate, Deficiency of micronutrients.

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