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“Development on the margin”

Effect Zn-edta Foilar Spray on Phosphorus and Zinc Interaction in Rice(*oryza sativa*)

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Abstract

Although both phosphorous (P) and zinc (Zn) are necessary nutrients for rice production, there is some kind of interaction between the two nutrients adversely affecting their uptake by plant and hence their subsequent performance in the plant. Accordingly, it is important to optimise the use of fertilisers, when fertilising different nutrients at the same time. Accordingly, a research project was performed to find the negative interaction that might exist between P and Zn and the related effects on different tissues of rice varieties in 2010 at Research Station of Tonekabon, Iran. The experiment was a completely randomised block design using with two treatments including 30 kilograms of P fertiliser and five levels of Zn including control, 0.2, 0.4, 0.6 and 0.8 % in the form of chelated zinc phosphate. The chelate was sprayed on rice plants at three different stages: right after the second transplant, after the full flowering, and at the milky stage. The P and Zn concentration in the grain and straw of rice plants were determined. Data was analysed using SPSS and MSTAT C and graphs were plotted by Excel. The results indicated that there is antagonistic effects P and Zn fertilisation and the highest plant P content was achieved in the Zn control plots (no fertilisation). Meanwhile, at the highest concentration of Zn (0.8 %) the lowest Zn concentration was resulted in the seed, soil and aerial organs. Such results can reconfirm the adverse interaction effects between P and Zn and hence the necessity for a optimised method of fertilisation.

Keywords: Antagonist, chelated zinc sulfate, optimised fertilisation, phosphorus, rice (*Oriza sativa* L.)